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President's Letter

Alcoholism: A 117 Billion Dollar Medical and Societal Embarrassment

ALCOHOLISM and drug abuse saps our nation economically, medically and spiritually. Yet, as a nation and as physicians, we seem little motivated to do much about this enormous problem.

Absenteeism, inefficiency and injuries on the job, slaughter on our highways, decreased academic achievement in our young people, adult crime increasingly related to increased drug use, suicides 38 times control groups: all strike at the very fabric of our society.

Alcoholism and alcohol abuse cost our economy $117 billion (Yes, billion!) a year according to the National Institute on Alcohol Abuse and Alcoholism. We could nearly balance our national budget by treating this disease adequately. Then add to this the $25 billion cocaine problem that our economy suffers. Think of the burn care costs Richard Pryor must have sustained.

Alcoholism affects 15 million individuals and 60 million family members, yet only 15 percent have had any formal treatment.

Sixty thousand people are killed a year on our highways, one-half or 30,000 by alcoholics or drug abusers. Ten years of Vietnam War, as tragic as that was, cost our country 54,000 young people. In the same ten years, we lost 300,000 people on the highways due to drinking drivers! This was enough to fill the Rose Bowl three times with dead bodies. Only recently has the public decided to do something about this.

Most medical students get an average of two hours in four years of medical school on the No. 3 illness. What I call the "two four three syndrome." I cringed when one of my medical students told me that he was all excited about spotting the alcoholic after his two-week tour on our alcohol unit. Yet he went to the University and pointed out to his orthopedic professor that the person hanging in traction there was also an alcoholic. His teacher responded: "We're here to treat fractures, not alcoholics." Repeated attempts to get increased exposure to this disease fall on deaf ears and are rebuffed, stating that "we can't fit it into the curriculum." The State of Minnesota leads the world in the treatment of alcoholism, yet our medical school offers woefully inadequate training in chemical dependency.

Cirrhosis, by itself, this year, passed diabetes as a cause of death, to the No. 5 spot. Yet many doctors and psychiatrists still have trouble calling it a disease. Some argue that alcohol is the symptom of a mental illness. You don't die from the symptoms.

Alcoholism fulfills Koch's postulates of a disease that is an etiologic agent, i.e., alcohol produces a set of reproducible pathologic changes. The AMA in 1957 along with the World Health Organization and the American College of Physicians has defined alcoholism as a disease. It is a progressive fatal disease. Untreated, the alcoholic dies 12 to 14 years sooner. And yet many physicians continue to judge alcoholics as moral degenerates. Tell that to Joseph Kemper Jr., Chairman of the Board of Kemper Insurance, or Betty Ford, or Joan Kennedy, or Carl Eller, or Glenn Sonmor, or Jim Klobuchar, Senator Harold Hughes, or a number of your colleagues or Joe Blow. This is an equal opportunity disease. It can strike anyone that drinks, no matter their station in life.

Some say if alcoholism is a disease, how come so many people are trying to catch it? I've never seen anybody try to become one, but 15,000,000 do. With social use of alcohol, there is control and a time when the nonalcoholic user knows when to quit. The alcoholic does not.

Alcoholism or chemical dependency is defined as the use of alcohol or other mood altering chemicals that causes increasing problems in that person's life: the home, work related, legal, moral, financial, and physical.

I have attended CPCs where the presenter said: "This 43-year-old alcoholic with varices" — described repeated treatments of bleeding varices with no attempt to treat the underlying alcoholism.

I've shuddered when I've seen patients sewn up in the emergency room, obviously intoxicated and allowed to return to the highways where they endanger themselves and others, with no attempt to intervene, detox them, perhaps even suggest treatment, or even call a cab. Or an ophthalmologist described to me a patient too drunk for visual exam and was told to come back when he sobered up. Instead he drove off a bridge and killed himself. Or physicians who say they don't have alcoholics in their practice. One in twelve adults is an alcoholic. One in five hospitalized adult patients are.

The AMA manual on alcoholism says we tend to deny what we don't know or understand. How true this is with this disease. Dr. Carl Meninger of the Meninger Clinic once says that "those that get well through the 12 steps of AA become weller than well". I go one step further. If the good Lord gave me a chance to populate another planet, I think I would choose the recovering alcoholic who was living the 12 steps of AA. On that planet I don't feel there would be war. There would be peace and love amongst fellow men and inner serenity that many of us do not attain. Recoveries are commonplace now, and alcoholics live to be productive and responsible citizens. Part of the problem is that AA is so anonymous, very few people are aware of how successful it is.

Recent studies show that 20 percent of adult patients in a general medical/surgical hospital are alcoholic. Yet few physicians recognize them and don't do anything if they do.

Insurance companies and HMOs often limit coverage to one chemical dependency treatment in a year or in a lifetime. That would be like telling a heart attack patient that he's only allowed one of those. Physicians also cite treatment failures. I rebutt that diabetics also fail their diet or take their insulin correctly, but do we refuse to see them again? No, I think it's appropriate that we re-educate. Many alcoholics have what I call a stuttering stop. It would be nice if the last drink they had would be the last one they ever had, but frequently many successful recoveries can look back on the time when they had decreasing bouts of alcohol intoxication and increasing periods of sobriety until finally all pieces of the puzzle fit into a solid sobriety.

If insurance companies and HMOs were truly concerned with cutting costs, why don't they opt for adequate treatment of a disease that costs our economy so much? Medical utilization of hospitals and other medical facilities is markedly diminished, after successful treatment, not only for the patient but for his/her family. A government study of 46 treatment centers showed a payoff of 33 million over a ten-year period of time after an $11 million expenditure in treatment programs.

Inexperienced managers cite the equal success of outpatient treatment with inpatient results, not realizing that inpatients are much sicker physically and mentally and need the extra physical and counseling care. That's why the results appear equal.

In nearly 25 years working with the chemically dependent, I've seen great progress in treatment. We have a much less sick patient entering our programs. I must say apologetically that a great deal of this success is due to the increased awareness by employee assistant counselors rather than by physicians. We as physicians could spot the alcoholic five years sooner than what we're doing now.

We as physicians have a great opportunity to spot and initiate treatment for the alcoholics and their families. Let's get serious about treating this No. 3 health problem. With any other disease it would be declared an epidemic. Be a part of the solution, not a part of the problem.

Here are some suggestions:

1. If you are unsure of yourself in handling this disease, go to seminars and learn how to recognize and treat this disease in its early stages. Read Dr. Joseph Pursch's column in the St. Paul Sunday paper called Dry Doc. Come spend a day or a week in our program and witness the process of recovery.
2. Ask alcohol counselors to consult on your patient when you're unsure.
3. Use MAST tests or other instruments to routinely screen all adult hospital patients.
4. Go to an AA meeting. If you don't know anyone in AA, call AA in your community or ask AA patients via your bulletin board to identify themselves to you.
5. Stress complete sobriety. Until we know more about this disease, we can't identify the one out of a thousand that might return to social drinking. The other 999 will try to see if they're that one. Most tried to return to social drinking and failed, and that's why they need treatment.

6. Use alcohol/sugar comparison. You can tell your patient alcohol has become a poison for them the same way sugar has for the diabetic.
7. If you're not interested in treating alcoholics, get them into the hands of somebody who is.
8. Do not use tranquilizers or sedatives in treating the active or dry chemically dependent patient.
9. Support efforts to divert some of the $400 million collected in Minnesota on liquor taxes to offset treatment of chemical dependency or other medical costs. If we can help buy the Metrodome with the extra tax on liquor consumed, why can't we do it for medical care costs?
10. Support "road block" checks for drunken drivers. If we allow our police to check for faulty brakes and lights, why can't we have a check on the faulty driver? The State of Connecticut does this and says that driving is a privilage and not a right; in addition the rights of the majority have precedence over those of the individual.
11. Support preventative efforts. We need to use alcohol much more maturely in our society. In Italy for instance, there's a fair amount of alcohol consumed, but very little alcoholism. Two things stand out. One, most of their drinking is done in either religious ceremonies, family celebrations, or with meals. Secondly, it's inappropriate to appear drunk in public. Perhaps this attitude change can go a long way in decreasing the amount of alcoholism in our society, much as fuel consciousness and awareness of our fragile environment has helped conserve exhaustable energy resources and protect our ecosystem?
12. Support efforts to see a meaningful change in the chemical dependency curriculum at the University of Minnesota.

Most physicians do an excellent job of treating the complications of this disease. But most are poor in recognition and treatment. It is way past time that we reassess our attitude about alcoholism and other chemical dependencies. I ask your support in addressing this No. 3 health problem. You will make the highways safer for yourself and your family. You will go far in cutting medical costs. You'll save on your taxes and insurance rates. In addition, you will benefit a lot of alcoholics and grateful family members. Alcoholics respond well to a caring and compassionate physician.

I'm very proud of my profession, I'm embarrassed how it handles the alcoholic and other chemical dependencies.

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association

Physician Assistants Notification

A Public Hearing on the proposed rules for the purpose of registering Physician Assistants has been rescheduled for January 30, 1985. The hearing will be held in Room 105, Minnesota Department of Health Building, 717 Delaware Street S.E., Minneapolis, MN 55414 commencing at 9:30 A.M.

A free copy of the proposed rules may be obtained upon request.*

Mark A. Skubic
Administrative Assistant to the Commissioner,
Minnesota Department of Health. (612) 623-5463

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*The rules have been published in the State Register for Monday, December 24, 1984.

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Editor's Notebook

Corporate Transformation of Medicine in Minnesota: How Physicians Think, or Lessons Learned from Focus Group Discussions with 150 Physicians

Eighth in A Series. First of Two Parts.

''Should a hospital be, in effect, a physician's plant facility — as most older American physicians maintain? Should it be a community health center? Should it focus on the major health needs of the community or try to do everything and be abreast of every medical advance, no matter how costly or how rarely used the facility will be? Should it focus on preventive medicine and on health education for the community? Or should it concentrate on the repair of health damage that has already been done? . . . What most hospitals do is pretend that there are no basic questions to be decided. The result, predictably, is confusion and impairment of the capacity of the hospital to serve any function and to carry out any mission.''

Peter F. Drucker, Management,
Harper & Row, 1974

''The modern economy is dominated everywhere by large corporations . . . Most professionals today, like other people, derive their income and much of their self-respect from organizations . . . Doctors also depend on large organizations, such as hospitals, but they have held out against the usual organizational demands for control.''

Paul Starr, The Social Transformation of
American Medicine, Basic Books, Inc., New York, 1982

NORTHFIELD, MINNESOTA — I am spending a day in the country. To be more precise, I have retreated to my farm to write this one. For three good reasons, I believe: (1) Fresh cold country air purifies the thoughts as it cools the emotions. (2) The distance from the city is directly proportional to a sense of perspective. (3) A writer on a farm can always furrow his brow and plough new ground. Besides, as Thoreau, America's original country gentleman, said: ''A sentence should read as if its author, had he held a plough instead of a pen, could have drawn a furrow deep and straight to the end.'' I shall now plough ahead.

Focus Groups

These last three months I have spoken to 150 medical staff members of a Twin Cities hospital. I have conducted 21 discussion groups held twice a week. Each Friday I have followed these ''focus groups'' by reporting my findings in a ''dump session'' before a group of hospital managers.

The Physicians

I have spoken to tall and short doctors, fat and thin doctors, men and women doctors, old and young doctors, HMO and non-HMO doctors, tufted and bald doctors, rich and poor doctors, private and corporate doctors, mind and body doctors, general and specialist doctors, cognitive and procedure doctors, town and gown doctors, and threatened and confident doctors — doctors of all shapes, sizes, types, and minds.

Unevenness of Economic Impact

What has struck me about this experience is that doctors are a diverse and diversified lot. Economic forces impact unevenly upon them. Those who are in solo practice, those in groups of four or less, those in overcrowded specialties, those unaffiliated with any large organization, those in cognitive specialties, those with general skills, and those who are young without established practices are hurting. On the other hand, older physicians with longstanding practices, certain elite specialists in uncongested fields, those affiliated with competitive medical plans, and salaried physicians are hardly touched by changes in the current environment. Indeed, certain physicians with the right skills and right market niche are prospering.

Individualistic Viewpoint of Physicians

Physicians retain an individualistic viewpoint. They do not see hospital problems through corporate eyes. This myopia particularly exists among open-staff hospital staffs where few common organizational goals exist. Given this state of affairs, I seriously doubt if the traditional medical staff structure, even in the MeSH format, can cope with aggressive medical competition, in which tightly-run organizations able to raise capital and able to make quick corporate moves, will have decisive advantages.

Control issues complicate the physicians' roles with hospitals. As long as a diverse medical staff, operating through a democratically-run medical staff structure, has veto power or significantly delaying power over a hospital's ability to make swift decisions, that hospital will have problems adjusting to the competitive environment in the short run and surviving in the long run. Because physicians can often block corporate action, you often hear administrators saying physicians are not "team players." Team players are important in the competitive hospital battles where "windows of opportunity" for new hospital products or programs may be open for only 90 to 180 days.

Division and Skepticism

Lastly, physicians remain divided and skeptical about the goals, ideals and methods of businessmen. Partly this is because we physicians are going through the grieving process — denial, anger, depression, negotiation, and acceptance — over the passing of a way of life where we were the kings and queens of our respective realms. Deep down most of us believe "being a good doctor" and "providing a high quality of medical care" still should be enough to help any hospital succeed economically.

And partly this division and skepticism stems from our cultural conditioning — the way we see the world and the way we think. The best explanation of this physician cast of mind that I have read comes from a book called TRUSTEESHIP AND THE FUTURE OF COMMUNITY HOSPITALS. The author, Doctor Basil Mott, Dean of the School of Health Studies at the University of New Hampshire and a health care consultant, observes:

"There are major differences in the way in which trustees and administrators, on the one hand, and members of the medical staff, on the other, view reality and even think. These differences color their ideas about the hospital and profoundly affect their relationships. If not understood, such differences can exacerbate conflict.

"Trustees must function as members of groups, for example, in board and committee meetings; whereas members of a medical staff work primarily in one-to-one relationships; for example, in serving patients and receiving advice from colleagues. Trustees make group decisions, which diffuse responsibility. It is the group that is accountable, except in cases of individual malfeasance. By contrast, physicians are accustomed to making individual decisions on behalf of their patients and their practice, for which they are personally accountable. In addition, physicians must often make quick, sometimes irrevocable decisions when their patients require prompt assistance. Typically, their day consists of a succession of one-on-one decisions regarding a large number of patients. By comparison, trustees are responsible for institutional decisions that require time for study and discussion, usually within committees, before action can be taken. Because they are unaccustomed to the ways of organizations, physicians also are more likely than trustees and administrators to interpret the behavior of others in personal rather than organizational terms . . .

"In sum, physicians are individuals who live in the present and who must act quickly, have confidence in their decisions, and take personal responsibility for them. By contrast, trustees are team members, who require time and patience to make institutional decisions that look toward the future, decisions for which they do not bear personal responsibility and which require considerable tolerance for ambiguity and uncertainty."

Physicians are, in short, no-nonsense people who want things done immediately in black and white terms.

A Point about Payment

Doctor Mott might have added one more point — physicians think differently because of the way they are paid, for units of service. Anyone who has served on committees with physicians and managers have witnessed this scene: physicians' beepers go off; they become restive; they rise to answer urgent phone calls; and then they hurriedly rush from the meeting to attend their patients. For the physician, such meetings often represent a waste of his/her economic time and a detriment to his/her patient's welfare.

Not so with the manager. He or she is paid to be there, to wrestle with the problems of ambiguity and uncertainty — problems which frustrate the physician because they fritter away time and money. At meetings, managers tend to be calm, physicians ruffled; particularly towards the end of the meeting, which all too often is held at 7AM or at the end of a tiring practice day.

Small wonder, then, physicians are reluctant to serve as medical staff officers, or God Forbid, as committee chairmen. As one physician remarked to me, "The only reward for being a good chairman is promotion to another chairmanship."

Even when physicians do serve their one or two year medical staff terms, they leave with a feeling their efforts were not appreciated — by their bankers, their peers, or their wives. After finishing his term, one medical staff president remarked to me: "Medical staff offices chew up good men/women and spit them out. The current tradeoffs between the demands of family, practice, and medical staff are simply unacceptable."

Solving Hospital Problems

In general, most physicians think most hospital problems can be solved by good nursing care, close attention to physicians' complaints, careful shaping of a hospital's image, selective buying of high medical technology, and thoughtful anticipation of the patients' comfort and convenience. And lastly, most physicians believe marketing is synonymous with advertising and is a fundamental waste of time and money, both of which could be better spent on basic patient care, physician support, and improved technology.

Physician Uneasiness

Physicians are uneasy about the present and leery of the future. You would think physicians would embrace hospital administrators as their economic saviors, but they do not. You would think MeSHs (Medical Staff-Hospital Joint Ventures) would be sprouting and taking root everywhere across this land, but they are not. You would think physicians would recognize that hospital administrators hold the keys to the physicians' economic growth — capital, a managerial staff, and the true management skills to take health care products to market — but physicians rarely acknowledge these realities. Instead physicians suspect administrators of practicing Medicine, and administrators suspect the physicians of practicing Management.

Loss of Control

Physicians sense a loss of control of their economic and cultural destinies to organizations and their managers. This sense of loss troubles physicians deeply.

And why shouldn't it trouble them? American physicians justly feel they have provided the best care in the world. Yes, this care has been based on one-on-one relationships with patients. Yes, this care has rested on the individual responsibility of the physician. And yes, it has been expensive. For most of us, the excellence has justified the cost. Now, to be asked to alter the traditional system on the basis of cost and to ration that care presents profound conflicts.

Part 2 will follow next month. In the next editorial I will deal with how hospital administrators think and with hospital physician joint-ventures.

Richard L Reece MD

University of Minnesota
Continuing Medical Education

Endourology for Radiologists — January 4-5, 1985 2-650 Malcolm Moos Health Science Tower, University of Minnesota, Minneapolis

Infectious Diseases — January 15, 1985 Mississippi Room, Coffman Memorial Union, University of Minnesota, Minneapolis

Advances in Endourology — February 1-2, 1985 2-650 Malcolm Moos Health Science Tower, University of Minnesota, Minneapolis

Topics in Geriatric Medicine: Drug Therapy Symposium VI — February 27-28, 1985 Radisson St. Paul Hotel, St. Paul

Annual Women in Medicine Symposium — March 1-2, 1985 2-650 Malcolm Moos Health Science Tower, University of Minnesota, Minneapolis

Annual Ophthalmology Specialty Course: Glaucoma — April 1-2, 1985 Holiday Inn Downtown, Minneapolis

Allergy and Clinical Immunology — April 11-13, 1985 Mayo Memorial Auditorium, University of Minnesota, Minneapolis

Eating Disorders — April 12-13, 1985 Earle Brown Center, University of Minnesota, St. Paul

Colorectal Problems for Primary Care — April 12-13, 1985 Hyatt Regency Hotel, Minneapolis

Family Practice Review: Update 1985 — April 15-19, 1985 Radisson St. Paul Hotel, St. Paul

Health and Addiction — May 2-3, 1985 Saint Paul Hotel, St. Paul

Antiviral Therapy — May 3, 1985 Radisson University Inn, Minneapolis

Heart Attack Prevention Workshop — May 19-20, 1985 Wilder Forest, Marine on St. Croix, Minnesota

High Incidence of Sepsis in Percutaneous Liver Abscess Drainage

JEFFREY R. CRASS, M.D.*

Percutaneous drainage of pyogenic liver abscesses is an accepted mode of therapy. The author has performed five such drainages during a 15 month period. Two of the patients developed septicemia during the procedure, became hypotensive and required intensive supportive care; both survived. A review of the literature confirms that this problem is more frequent with abscesses in the liver than with those at other sites. Rapid emptying of the abscess with related wall stresses and the nature of the hepatic vascular system are possible etiologic factors.

THE PERCUTANEOUS APPROACH to liver abscess drainage has rapidly become an accepted primary mode of therapy.[1-13] The procedure has been described as yielding little patient discomfort, and resulting in minimal interference with vital functions.[6] This report presents my results with five patients drained during the fifteen months beginning October, 1981. Two patients developed septicemia with septic shock during and after the drainage procedure. A third patient was in septic shock prior to attempted drainage. This complication has not occurred in twenty abscesses we have drained in multiple other locations. Analysis of reported cases suggests that the increased risk of septicemia following liver abscess drainage is not unique to our series. Etiologic considerations will be considered and changes in technique that might reduce this risk will be proposed.

Subjects and Methods

Percutaneous drainage of liver abscess was performed in five patients by the author during a fifteen month period beginning October, 1981 (Table). The first four of these cases were at the University of Chicago Hospitals and Clinics; the last was at the University of Minnesota Hospitals. All patients were studied by computed tomography and/or ultrasound prior to drainage.

Ultrasound examinations were performed with a variety of articulated arm systems at one centimeter longitudinal, transverse, and oblique intervals, complemented by real-time studies.

CT studies at the University of Chicago were performed on a Somatom II. At the University of Minnesota CT was performed on a Pfizer 450. All examinations included the entire abdomen at 1.5-1.6 cm. intervals. Guidance for the drainage procedure was varied. In two patients I utilized both fluoroscopy and ultrasound; CT, ultrasound, and fluoroscopy alone were each used once as the primary guidance technique.

The drainage technique utilized has been previously reported.[14] All patients were given a broad spectrum antibiotic intravenously prior to the percutaneous drainage. Employing routine sterile technique, an 8.3 French pigtail catheter was introduced into the abscess cavity using a modified Seldinger technique. Complete evacuation of the pus was followed by generous irrigation and sinography. The procedure was altered for the last case of this series. Here only 50 cc. of pus were drained initially. The remaining 150 cc. were allowed to drain gradually by

TABLE

Number	Age	Origin	Organism	Guidance	Complication
I	57	Cholangitis	Pseudomonas	Ultrasound	0
II	36	Crohn's disease	Multiple-bowel flora	Fluoroscopy	Sepsis
III	46	Post-traumatic	Pseudomonas	Ultrasound & Fluoroscopy	Sepsis
IV	33	Post-surgical hematoma	Bowel flora	CT	0
V	32	Idiopathic	Streptococcus Intermedius	Ultrasound & Fluoroscopy	Subcapsular Hematoma

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*Department of Radiology, University of Minnesota Hospitals and Clinics, Minneapolis, Minnesota.

gravity over the next 36 hours at which time the pigtail catheter was replaced by a large 12 French sump type catheter. Evacuation was noted to be complete at the time of the catheter change.

Results

All five patients were successfully drained. Two patients (II, V) were surgically explored at two (Patient II) and seven (Patient V) days after percutaneous drainage. Satisfactory drainage of the liver abscess was confirmed in both. Patient II was operated on for severe Crohn's disease of the small bowel. Patient V was operated on because of very slow resolution of his fever. At the time of surgery the adequacy of the drainage was confirmed. A small subcapsular hematoma was noted at the catheter entrance site into the liver.

Patient I was in septic shock at the time when the procedure was performed. He remained so for several days following successful drainage and gradually improved. Patients II and III both developed rigors during the procedure and became hypotensive shortly thereafter. Intensive supportive measures were required to maintain homeostasis over the next 48 hours. Gradual improvement then began and both patients survived. Whether the intercurrent bowel resection of Patient II was related to the gradual improvement in uncertain. Patient IV, whose abscess developed because of a postoperative hepatic hematoma, recovered without complications. The course was prolonged because of the slow resolution of the hematoma (Figure). This hematoma prevented complete evacuation at the initial drainage.

Discussion

The pyogenic liver abscess has historically been regarded with dread. Although solitary abscesses did respond to drainage, diagnosis was usually delayed by the nonspecificity of symptoms and our limited ability to image the liver. The rapid advances of imaging technology paralleled by more potent antibiotics have completely changed the complexion of this disease, such that death is uncommon and morbidity low.

The morbidity of solitary liver abscess has been further decreased by percutaneous abscess catheter drainage techniques. Kraulis, et al., in his 1979 report of two cases, was able to find few previous reports in the literature.[6] Since that time at least 75 cases have been cited and the procedure has been enthusiastically accepted, with radiologists and surgeons alike recommending percutaneous drainage as the procedure of choice.

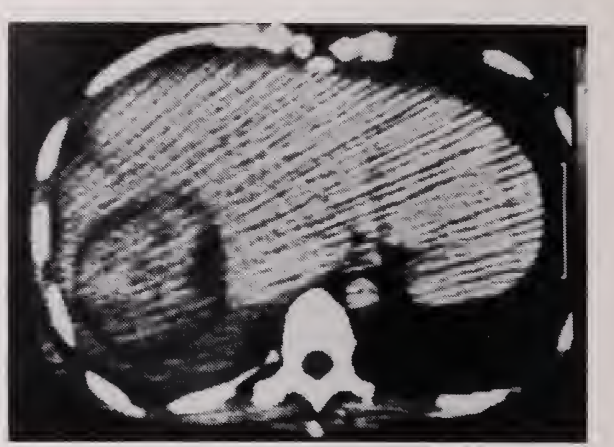

Figure — A large clot within this hepatic abscess prevented rapid evacuation of pus.

Although mortality from percutaneous drainage seems very low from the published reports, the morbidity is less certain. There is no consensus among reports as to what constitutes a complication. Furthermore, many cases have only been reported as part of large series including abscesses at many sites, not noting in which patients the complications have occurred.

I consider septicemia following drainage, which occurred in two of our patients, a significant complication. Hill, et al., in his review of this disease, found that bacteremia correlated with mortality.[16] When the reported cases that include sufficient data for analysis are combined, 25% of patients who were not in septic shock at the time of the procedure was performed developed shock during or immediately after it.[3,4,6,7,15] This is similar to my experience. The report of Berger et al.[12] which noted a febrile crisis occurring prior to improvement, suggests a similar experience. The liver abscess, therefore, seems more prone to this complication than abscesses in other areas.

An explanation for this difference is suggested by the work of McFadzean, et al.[1] They noted that if more than 150 cc. were aspirated from a liver abscess at one setting, pain and other symptoms were exacerbated. They advocated replacing the pus removed with an equal volume of air. This is in contrast to the standard drainage techniques which advocate complete evacuation.[17]

The explanation for this symptomatic exacerbation and post-drainage sepsis probably lies in the anatomy of the liver abscess. In most locations where an abscess has developed, mobile viscera are displaced by the mass effect of the lesion. The liver abscess, however, is located within a relatively inflexible solid organ. Much of the growth of the liver abscess results from active destruction of liver parenchyma rather than from displacement. The rapid emptying of an abscess cannot be readily accommodated by deformation of the liver. Stresses in the abscess wall yield pain as well as sites for bacterial contamination of the surrounding parenchyma. The potential for septicemia is increased by the vascular micro-anatomy of the liver. The hepatic sinusoids lack the endothelial lining of other vascular beds such that any degree of bacterial contamination of the hepatic parenchyma is essentially intravascular. Septicemia immediately results if the contamination exceeds the capacity of the Kupffer cell network.

If the above assumption is correct, then Patient IV, whose abscess developed about a large intrahepatic clot was probably protected from intravascular sepsis by the clot which prevented complete evacuation of the pus. Patient V was treated differently with the above considerations in mind. Only a small amount of pus was aspirated initially, and the remainder was allowed to drain slowly. This decreased the hepatic stress and sepsis did not occur. If pus is evacuated completely, its replacement by air as described by McFadzean might also reduce the septic complications.

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Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

1. Preferably an alumnus of the University of Minnesota Medical School.
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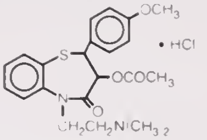
30 mg and 60 mg tablets

DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+)-cis- The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1 Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.

2 Exertional Angina CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1 **Angina Pectoris Due to Coronary Artery Spasm**. CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks)

2 **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash asthenia (1.2%), AV block (1.1%). In addition, the followin were reported infrequently (less than 1%) with the order of tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, dia, palpitations, congestive hear syncope
Nervous System.	Paresthesia, nervousness, som tremor, insomnia, hallucinations, and a
Gastrointestinal:	Constipation, dyspepsia, diarrhea, mild elevations of alkaline phosphatas SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photose
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing epis vasospastic angina developed periods of transient asym asystole approximately five hours after receiving a single dose of CARDIZEM.

The following postmarketing events have been reporte quently in patients receiving CARDIZEM: erythema multifor kopenia; and extreme elevations of alkaline phosphatase SGPT, LDH, and CPK. However, a definitive cause and effect these events and CARDIZEM therapy is yet to be establish

OVERDOSAGE OR EXAGGERATED RESPONS

Overdosage experience with oral diltiazem has been Single oral doses of 300 mg of CARDIZEM have been well by healthy volunteers. In the event of overdosage or exag response, appropriate supportive measures should be emp addition to gastric lavage. The following measures may be con

Bradycardia	Administer atropine (0.60 to 1.0 mg is no response to vagal blockade, ad isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fix degree AV block should be treated diac pacing.
Cardiac Failure	Administer inotropic agents (isopro dopamine, or dobutamine) and diuretic
Hypotension	Vasopressors (eg, dopamine or leva bitartrate).

Actual treatment and dosage should depend on the severi clinical situation and the judgment and experience of the physician.

The oral/LD_{50}'s in mice and rats range from 415 to 740 and from 560 to 810 mg/kg, respectively. The intravenous L these species were 60 and 38 mg/kg, respectively. The oral dogs is considered to be in excess of 50 mg/kg, while letha seen in monkeys at 360 mg/kg. The toxic dose in man is not but blood levels in excess of 800 ng/ml have not been ass with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic nary Artery Disease or Angina Pectoris at Rest Due t nary Artery Spasm. Dosage must be adjusted to each p needs. Starting with 30 mg four times daily, before meals bedtime, dosage should be increased gradually (given in doses three or four times daily) at one- to two-day interva optimum response is obtained. Although individual patie respond to any dosage level, the average optimum dosag appears to be 180 to 240 mg/day. There are no available data ing dosage requirements in patients with impaired renal or function. If the drug must be used in such patients, titration sh carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abo anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be coadministered with short- and long-acting nitrates, b have been no controlled studies to evaluate the anti effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 10 0088-1771-47) and in Unit Dose Identification Paks of 10 0088-1771-49). Each green tablet is engraved with MARION side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47) and Dose Identification Paks of 100 (NDC 0088-1772-49). Each tablet is engraved with MARION on one side and 1772 on the

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Delayed Postoperative Bloody Pericardial Effusion

PER H. WICKSTROM, M.D.;* BJORN K. MONSON, M.D.;* and HOVALD K. HELSETH, M.D.*

Twenty-nine patients in a series of 1928 consecutive open heart operations underwent subxiphoid tube drainage for delayed postoperative bloody pericardial effusions (DPE) from 10 days to 3 months postoperatively, an incidence of 1.5%. Drainage was more frequent in patients anticoagulated with warfarin (8.8% 23/261). The diagnosis of DPE could generally be made on the basis of the history, the physical examination and the chest Xray. The symptoms of DPE were usually nonspecific such as malaise and chest fullness. Echocardiography has provided substantiating evidence. A fall in the serum hemoglobin and a rise in the prothrombin time on an established dose of warfarin were also noted frequently.

The subxiphoid tube drainage was carried out under local anesthesia and resulted in rapid resolution of what otherwise is a problem with prolonged morbidity and an occasional mortality. The subxiphoid tube was usually removed on the first post-drainage day. In only one case was drainage required a second time. There were no deaths attributed to DPE.

DELAYED POSTOPERATIVE bloody pericardial effusion has been recognized as a relatively common complication of cardiac surgery associated with significant morbidity and an occasional mortality. Traditionally, drainage of these effusions has been reserved for those patients who are hypotensive because of cardiac tamponade. In hopes of lessening the associated morbidity and mortality we have attempted to drain these effusions at an earlier stage.

Materials and Methods

From January 1977 through December 1982 we performed 1928 open heart operations; of those 1024 were solely coronary artery bypasses. These were generally not anticoagulated with warfarin. Most received short term, low dose heparin therapy consisting of intravenous heparin at 400 units per hour on the first three postoperative days followed by 3000 units subcutaneously every eight hours for the next four days. They also received 150 mg of dipyridamole per day. There were 394 valve replacements consisting of 168 mitral valve replacements, 141 aortic valve replacement, 54 composite grafts and 31 double valve replacements. Two hundred sixty-nine of these patients received at least one mechanical valve while 125 received tissue valves. Only those with mechanical valves were routinely anticoagulated with warfarin. Those with tissue valves usually received dipyridamole.

At surgery, standard bypass techniques were employed with heparin anticoagulation at 2.5 mg kg of body weight. This was reversed with 2 mg of protamine for each milligram of heparin employed. The pericardium was not closed. Care was taken to control all small bleeding sites with cautery. Two anterior chest tubes provided drainage and these were removed on the second postoperative day or when the drainage was less than 50 ml over an 8 hour period. On occasion this meant removal on the third day.

The warfarin, when used, was usually started when the chest tubes were removed. The protimes were followed daily for the remainder of the hospitalization. An effort was made to keep the protimes between 1.5 and 2.0 times control. Chest films were routinely obtained daily for the first three days and then again on the fifth and the eighth postoperative days.

Twenty-nine patients developed postoperative bloody pericarditis to the extent that drainage was felt to be necessary. Those patients form the basis of this report.

Results

There were 23 men and six women, ranging from 17 to 69 years of age (mean 51 years). Twenty-three patients underwent valve replacement, either alone or in combination with coronary artery bypass (eight cases). There were 14 aortic valve replacments, five mitral valve replacements, three double valve replacements and 1 composite graft. There were only six cases of coronary artery bypass alone. There were no cases in which a congenital defect was repaired.

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Presently, Dr. Wickstrom is with the Duluth Clinic in Duluth.

All valve cases but two were on warfarin anticoagulation. These two had valve replacements with Ionescu pericardial valves (one mitral and one aortic) and they were given dipyridamole. Two of the six coronary cases were on warfarin, selected for that treatment because of small coronary arteries and poor flows measured in the grafts at the time of surgery. Another coronary case was a dialysis patient who underwent dialysis with regional heparinization in the postoperative period. The remaining three coronary patients received only our usual low dose heparin and oral dipyridamole.

None of these patients required a reexploration for bleeding in the early postoperative period. The average amount of postoperative bleeding retrieved from the mediastinal tubes was a modest 478 ml, ranging from 150 ml to 1300 ml.

The most frequent complaint was chest discomfort (15 patients). Often this was described as a substernal "fullness." Also half of the patients complained of shortness of breath. Weakness, anorexia, and malaise were mentioned frequently. There were five patients who offered no complaints, and the size of the effusion in these patients did not differ from that found in the symptomatic patients.

The most frequent physical sign was an increase in the loudness of the valve click. This occurred in virtually every patient with a mechanical prosthesis. It is thought to be due to an increased sound transmission through the fluid filled pericardium, much as the sound of two rocks clicking together can better be heard underwater than in the atmosphere.

Signs of pericardio-tamponade such as a paradoxical pulse paradoxis, distended neck veins, right upper quadrant tenderness and relative hypotension (a systolic BP 20 mm below preop) occurred in over half of the patients (15). A rub was heard in 10 patients. In 12 patients a drop in the serum hemoglobin of 2 gms% or more was noted in the days immediately preceding the pericardial drainage. Most often there was a slight weight gain or at least a cessation of an ongoing weight loss in the days before the drainage.

The most important diagnostic tool was serial chest Xrays. Significant pericardial fluid was heralded by a globular contour to the heart shadow, and a significant increase in its size (average of 3.7 cm larger when compared to the preoperative film) (Figure 1). We have used echocardiography in 19 of our patients and have found that it generally concurs with our clinical impression.

All 29 patients were treated with surgical subxiphoid tube drainage under local anesthesia in the operating room. Often this was proceeded by a three-day course of prednisone therapy, a treatment we

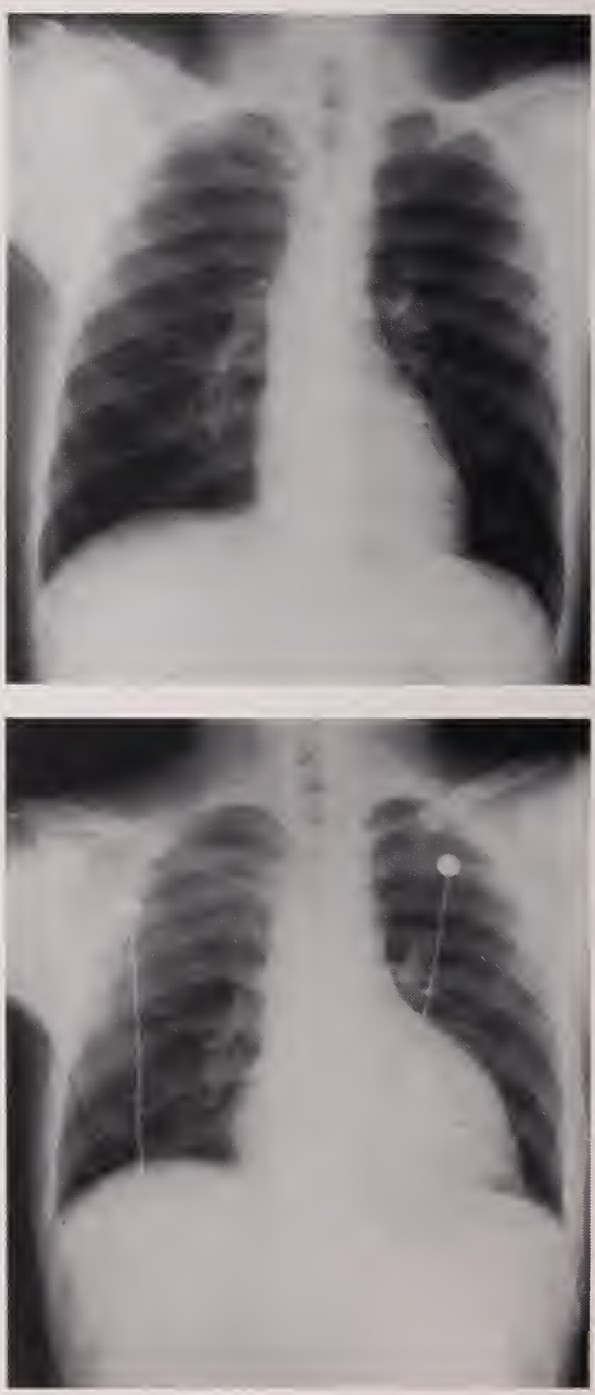

Fig. 1 — Chest roentgenograms (A-top) before aortic valve replacement and (B-bottom) ten days after aortic valve replacement demonstrating a globular enlargement of the heart shadow on the postoperative film.

have found useful in resolving the postopertive effusions in patients not on anticoagulation. There was one death in a valve patient with Klinefelter's syndrome which occurred two months after the drainage, and it was attributed to low cardiac output and pulmonary sepsis. In only two patients was the process allowed to progress to the point of signficant hypotension (blood pressure below 100 systolic). In 25 patients drainage was carried out on the tenth to the twenty-fourth postoperative day. In four patients the delay was between one and three months postoperatively. Three of these were not anticoagulated and we persisted in medical treatment with prednisone and lasix longer than usual. The third was a dialysis patient who did not develop her symptomatic effusion until late.

The effusions were invariably bloody, although darker in color and more serious than one would expect from an acute bleed. On the average 643 ml were drained, varying from 100 ml to 1500 ml. There were two patients in whom less than 200 ml were drained, both of these had signs of mild tamponade.

After drainage a small chest tube was left in the mediastinum. The drainage from this was minimal, usually less than 100 ml per day and the tube could always be removed on the first or second postoperative day. The drainage was uniformly successful in relieving symptoms. Only one patient had to be drained a second time. He was a 44 year old Vietnamese man who was on warfarin because of mitral valve replacement. His initial drainage was done three weeks after his heart surgery. His effusion recurred and four months later he underwent pericardiectomy through a left anterior thoracotomy with the drainage of 1000 ml of serosanginous fluid.

Usually postdrainage chest x-ray obtained on the first or second postdrainage day showed a decrease in the size of the heart shadow when compared to the pre-drainage film (average of 2.6 cm smaller). Often an interpericardial air fluid level was noted (Figure 2). Further resolution after that was rather slow, and it was often not until several weeks after discharged that follow-up films showed the heart shadow to be back to the preoperative dimensions.

Discussion

Significant delayed bloody postoperative pericardial effusion is rare in our experience in patients not on warfarin therapy (.36% 6/1667), whereas in patients on warfarin anticoagulation we have found it to be a relatively frequent problem (8.8% 23/261). The incidence also may vary with the type of operation. In our experience it is more common in warfarin anticoagulated double valve replacements (9.6% 3/31) and aortic valve replacements (13.0% 13/100) than it is in warfarin anticoagulated mitral valve replacements (4.0 4/101) and composite grafts (1.9% 1/54). Others have also noted an association with anticoagulation.[1,2,3,4,5] It would seem logical that the higher the prothrombin time the more likely the complication. In this series the highest single prothrombin time recorded for any patient was 26 seconds and the average highest prothrombin time before the drainage procedure was 16.9 seconds, quite low by most standards. We have purposely been slow to anticoagulate our patients because of our awareness of this problem. Yet our incidence of this complication is as high in anticoagulated patients as any reported.

We admittedly look for the problem. It generally occurs in a patient who has been anticoagulated because of valve replacement with a mechanical prothesis. The early symptoms and signs appear about the time when discharge is being contemplated. In fact, half of our patients had been discharged and then readmitted for their drainage procedures. The patient may complain of malaise, substernal fullness, weakness, anorexia and later shortness of breath. These symptoms are often accompanied by a fall in the serum hemoglobin, a rise in the prothrombin time and a weight gain. There is usually an increase in the loudness of the valve click. A cardiac rub may be

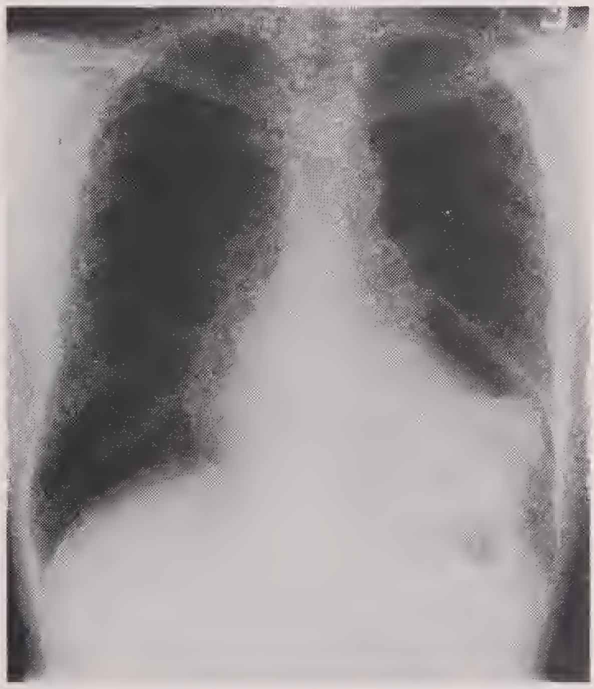

Fig. 2 — Chest roentgenogram demonstrating an air fluid level one day after subxiphoid drainage of a delayed postoperative bloody pericardial effusion.

heard. If the rub diminishes or disappears it may be a sign of further fluid collection rather than a sign of improvement. We prefer to intervene before signs of tamponade, such as distended neck veins, pulses paradoxis and hypotension become evident.

The diagnosis is suggested by all of the above, and it is confirmed by chest Xray. If the heart shadow becomes globular in contour and increases significantly in size little else is needed for the diagnosis. Echocardiography is substantiating evidence but we have not depended on it.

It is our belief that this process is part of the pericarditis syndrome which is seen to some extent in nearly all postoperative heart surgery patients. There is evidence that it has an allergic and inflammatory component.[6,7] It can be aggravated by anticoagulation. When the early stages become evident we stop anticoagulation and treat with prednisone and sometimes with diuretics. If signs of resolution are not evident within a few days we employ subxiphoid tube drainage.

While some have found that pericardiocentesis has worked well[1,8] most share our preference for an operative subxiphoid approach.[3,4,5,9] It can be done under local anesthesia; it is quite simple and safe, and assures complete drainage of the pericardial space thereby making recurrence extremely unlikely. The mediastinal tube can usually be withdrawn on the first postoperative day and the patient can often be discharged on the following day.

If the process of postoperative bloody pericarditis is not interrupted early, there is a tendency towards pericardial fluid collection resulting in hepatic congestion which in turn results in the need for less coumadin. If the patient has been discharged or if the anticoagulation status is not followed closely the prothrombin time may rise to quite high levels on what had previously been a proper coumadin dosage. Not only does this result in the acceleration of the pericardial fluid collection but other hemorrhagic complications may ensue. We have had no deaths or serious morbidity due to postoperative bloody pericardial effusion. This is credited to an awareness of this complication and its manifestations on the part of all who follow our patients.

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INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks. Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established. If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg, below 90 mmHg) Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal. The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known. However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly.

Information for Patients: Headache may occur during initial therapy with SORBITRATE. Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use.

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates.

Isosorbide dinitrate acts directly on vascular smooth muscle; therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur. Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose. Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure.

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended. The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg); Chewable Tablets (5, 10 mg); Oral Tablets (5, 10, 20, 30, 40 mg), Sustained Action Tablets (40 mg)

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Infectious Disease Complications of Acute Leukemia

Pathogenesis, Therapy, and Prevention

PHILLIP K. PETERSON, M.D.*

Although infections remain a major cause of death in patients with acute leukemia, significant progress has been made in the management of many life-threatening infections. Nonetheless, we urgently need new methods for diagnosis, prevention, and treatment of serious bacterial and fungal infections.

DESPITE CONSIDERABLE PROGRESS in the management of acute leukemia and the development of what is almost a bewildering array of potent antibiotics, infections remain a major cause of death of leukemic patients.[1] Although partly due to intrinsic host defense defects associated with acute leukemia, the increased risk of infection is in large measure a consequence of the treatment process itself. Granulocytopenia and disruption of the epithelial barrier of the gastrointestinal tract — effects secondary to cytotoxic chemotherapy — are of pivotal importance in this regard. These two factors plus intravenous catheterization and disturbance of the patient's indigenous microbial flora are the key elements in the pathogenesis of most serious infections in acute leukemia (Table 1).

A large number of microorganisms can behave as opportunists in the setting of acute leukemia. Among these etiologic agents are certain viruses, especially members of the herpesvirus group and hepatitis viruses, and selected parasites, in particular *Pneumocystis carinii*. In terms of common life-threatening infections, however, bacteria and fungi have posed the greatest problems, and it is with these two groups of organisms that we will deal with here. Although there is still much controversy over the particulars of management of these types of infection, there is general agreement about certain basic principles (Table 2).

Bacterial Infections

Gram-negative bacillary infections

The combination of profound granulocytopenia (neutrophil count less than 500 per mm^3) and an altered gastrointestinal tract and oropharyngeal flora place leukemic patients at increased risk of gram-negative bacillary infections. In virtually every study, three organisms — *Escherichia coli, Pseudomonas*

TABLE 1

Predominant Host Defense Abnormalities and Opportunistic Infections associated with Treatment of Acute Leukemia

Host Defenses	Iatrogenic Factors	Opportunistic Infection
Epithelial barrier		
Gastrointestinal tract	Cytotoxic drugs, antibacterials	Gram-negative bacillemia, candidiasis
Skin	Venous catheters, antibacterials	Septicemia (staphylococci, diphtheroids, *Candida*)
Respiratory tract	Cytotoxic drugs, antibacterials, respirators	Gram-negative bacillary pneumonia, aspergillosis
Polymorphonuclear leukocytes	Cytotoxic drugs	Gram-negative bacillemia, staphylococcal infections, candidiasis, aspergillosis
Cell-mediated immunity	Cytotoxic drugs immunosuppressive agents)	Fungal infections, herpesvirus infections, pneumocystosis

TABLE 2

General Principles in Management of Infections in Acute Leukemia Patients

Prevention — rigorous handwashing
— assiduous catheter care
— gut decontamination
Therapy — early, empiric*
— high dose, prolonged
— combination drugs
— guided by: aggressive search for pathogens, antibiotic susceptibilities, drug levels

*Empiric in this context signifies the rational use of antibiotics — aimed at the most likely etiologic agent(s) based upon previous experience in a given clinical and hospital setting — administered prior to the definite identification of a pathogen.

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*Associate Professor of Medicine, Infectious Disease Section, University of Minnesota, Minneapolis.

†Presented at symposium, "Leukemia Progress — 1984," Saturday, April 14, 1984, Mayo Auditorium, University of Minnesota, Minneapolis, Minnesota.

Sponsored by: Minnesota Chapter, Leukemia Society of America, Inc., Section of Hematology, University of Minnesota, Mayo Foundation.

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aeruginosa, and *Klebsiella pneumoniae* — have been the most common blood culture isolates,[2] and these bacteria are also the predominant cause of pneumonia.[3] Other sites of infection include the urinary tract, oropharynx, skin and meninges.

Because signs of localized infection may be subtle in granulocytopenic patients and the outcome disastrous if therapy is withheld until positive cultures are reported, broad spectrum empiric antibiotic therapy must be initiated promptly in febrile patients with granulocyte counts less than 1000 per/mm^3.[4] Although empiric regimens of three drugs, such as gentamicin, carbenicillin, plus cephalothin, were most commonly used in the early to mid-1970s, two drug combinations, such as tobramycin plus ticarcillin have become popular in recent years. An improved prognosis has been associated with susceptibility of the pathogen to the initial empiric antibiotic regimen.[5] The value of substituting any of the expanded spectrum antibiotics in the empiric regimen, e.g., amikacin, moxalactam, or piperacillin has not yet been established. In hospitals where multiple-resistant gram-negative bacilli are a problem, the use of such agents seems justified.

Since a definite etiology of fever is not determined in up to 50 percent of granulocytopenic patients, recommendations have varied as to when to stop empiric antibacterial therapy. Recent data, however, indicate that empiric antibiotics should be continued for the duration of the granulocytopenia.[6] In addition, empiric antifungal therapy should be considered in the granulocytopenic patient on antibacterial drugs if fever persists at the end of one week.

Although initial studies suggested that therapeutic granulocyte transfusions were of adjunctive benefit in granulocytopenic patients with documented gram-negative infections, Winston et al.[7] were unable to substantiate their value in a large, controlled study. The failure of granulocyte transfusions may be related to a technical inability to procure sufficient numbers of granulocytes and/or to low levels of serum opsonins in patients who do not respond to granulocytes.[8] Passive immunization with antiserum to the J5 *E. coli* strain has recently been shown to significantly reduce mortality in patients with gram-negative bacteremia.[9] Antibodies to this mutant *E. coli* strain are known to be cross-protective against the endotoxic effects of gram-negative lipopolysaccharides. This approach to augmentation of host defenses and the administration of opsonins (immunoglobulins and complement), perhaps in conjuction with granulocyte transfusions, may hold promise in the future.

The primary goal of management of infections in leukemic patients should be prevention. Although laminar air flow rooms significantly reduce the incidence of infection in granulocytopenic patients,[10] considerations as to cost and inconvenience preclude the use of these protected environments in most hospitals. Reverse isolation, as it has been practiced in most hospitals, has been demonstrated to be of no benefit,[11] and prophylactic granulocyte transfusions likewise appear to be of no value.[12]

Another approach to the prevention of gram-negative bacillary infections is to decontaminate the gastrointestinal tract of gram-negative pathogens by prophylactic antibiotics.[13] Several oral non-absorbable antibiotic regimens have been shown to prevent gram-negative infections; however, cost and poor patient compliance are serious drawbacks of most of these regimens. The most popular method of oral prophylaxis — administration of twice daily trimethoprim/sulfamethoxazole — bypasses these problems. Theoretically, trimethoprim/sulfamethoxazole selectively decontaminates the gastrointestinal tract of most aerobic enteric bacilli while leaving "colonization resistance" of the anaerobic flora intact. Although conflicting results have been reported, most studies involving profoundly granulocytopenic patients have demonstrated a protective role. Nevertheless, a consensus has not been arrived at as to the proper use of this agent because of concerns regarding the potential risks of trimethoprim/sulfamethoxazole (Table 3).

TABLE 3

Trimethoprim/Sulfamethoxazole Prophylaxis in Acute Leukemia Patients

Potential Benefits	**Potential Risks**
1. Prevention of *P. carinii* infections	**1. Emergence of antibiotic-resistance**
2. Prevention of gram-negative bacteremia	**2. Bone marrow suppression**
	3. Predisposition to fungal infection *(Candida, Aspergillus)*
	4. Allergic reactions
	5. Liver, renal abnormalities

Gram-positive bacterial infections

Granulocytopenia and intravenous catheterization have been regarded as the most common predisposing factors in acute leukemia patients who develop gram-positive bacteremia. While *Staphylococcus aureus* was at one time the most important gram-positive pathogen in these patients, *Corynebacterium spp* (diphtheroids) emerged as an important isolate in some hospitals in the mid to late 1970s, only to be replaced by *S. epidermidis*, the most frequent blood culture isolate in many institutions now caring for profoundly granulocytopenic patients. The reasons for these ecologic changes are not entirely clear, although more prolonged use of indwelling venous catheter devices may play a role in the pathogenesis of *S. epidermidis* bacteremia. Changes in empiric antibiotic therapy or oral prophylaxis regimens[14] may also be involved.

Although *S. epidermidis* infections are rarely fatal, they can cause significant morbidity. That *S. epidermidis* is commonly resistant to penicillinase-resistant penicillins also makes antibiotic treatment more difficult. Vancomycin has often been used to treat such organisms, and this drug is usually also indicated for *Corynebacterium* infections. When to remove an intravenous catheter in the face of gram-positive bacteremia is an unresolved issue. Assiduous catheter care, meticulous hand-washing by personnel, and oral vancomycin prophylaxis have each been advocated as means of preventing these infections but all without documentation of benefit from controlled, prospective studies.

Antibiotic-associated pseudomembranous colitis due to toxin-producing *Clostridium difficile* has presented a problem in some oncology units. Since diarrhea is a common occurrence in acute leukemia patients following induction chemotherapy — and these patients are frequently on antibiotics — the proctoscopic evaluation of all such patients poses a major practical problem and is not without risk in the presence of granulocytopenia. Since this bacterium and its toxin can be found in the stools of asymptomatic patients, microbiologic testing alone cannot be considered diagnostic. The true significance of this organism and the proper means of diagnosis and management await future studies.

Fungal Infections

A number of fungi can cause devastating infections in patients with acute leukemia, but two opportunists —*Candida* and *Aspergillus* — are decidedly most important.[15] Granulocytopenia and prior antibacterial therapy appear to each play a role in the pathogenesis of invasive infections by both of these organisms. While the portal of entry is the gastrointestinal tract in the case of disseminated candidiasis, inhalation of spores is the initial step in the pathogenesis of aspergillosis.

A critical problem in management of patients with either systemic candidiasis or aspergillosis is the absence of clinically useful early diagnostic tests. Indeed, the diagnosis continues to be established only at autopsy in the majority of cases. Because of this, guidelines have been established for the empiric use of amphotericin B.[6,15] This antifungal drug remains the mainstay of therapy of both fungal infections, despite its toxicity and often unimpressive results in this clinical setting. Addition of flucytosine has been advocated by some; however, there are no controlled studies documenting improved survival with combination therapy. Miconazole has been reported to have been effective in cancer patients with systemic candidiasis;[16] however, randomized controlled studies are lacking.

Prevention of systemic candidiasis appears to depend primarily upon limiting colonization of the gastrointestinal tract. Although prophylactic oral nystatin has been routinely used in many centers, efficacy has again not been proved in a randomized study. Likewise, data are not yet sufficient to determine the prophylactic value of ketoconazole in granulocytopenic leukemia patients. Filtration of incoming room air to remove *aspergillus* spores probably is of benefit in preventing aspergillosis, although this is again unproved.

Conclusions

In this brief overview it has hopefully become apparent that although a good deal has been learned about the pathogenesis of infections in acute leukemia, many questions remain unanswered. We are clearly in need of better antibacterial and antifungal prophylaxis. We also need improved methods for rapid diagnosis, especially of the deep-seated mycoses, and we remain in desparate need of less toxic and more effective antifungal drugs. Improved survival of leukemia patients will depend upon progress in these areas.

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10-16. Will be found on page 22.

No one said it was going to be easy.

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Awareness of Abuse

*S.R. Maxeimer, Jr., M.D.**

Almost every newspaper or magazine today has its shocking story about physical or sexual abuse of children. It begins to be confusing. Is it really so prevalent? Has it always been so well hidden, or is it all new? Can we believe the stories of children? What can we do about it? Where do physicians fit in?

There are very few definitive answers. Yes, it's prevalent, across all gradations of society, but nobody knows its true incidence. Yes, it has been well hidden, just as alcoholism used to be, but maybe it is growing as well. Yes, we can believe the stories of children, but we must be scrupulously careful not to cue them (the witches of Salem teach us about that danger)!

Child abuse is a pattern, not an isolated event. The next episode is likely to be worse than the last one. This is the reason society requires that physicians report even the suspicion of child abuse to a law enforcement agency or child protection service. We do not have the legal right to keep silent, nor to try to handle this kind of problem by ourselves.

Much must be done by all kinds of citizens to build a helpful response to this terrible challenge. Physicians should be at the forefront, for ours is the best opportunity for prevention, and often the first opportunity for detection. Treatment considerations are complex, since they touch the child, the siblings, the perpetrator, and the family as a whole. They also involve varieties of therapy, various sorts of providers, and still unpredictable results.

Curiously there are very few experts in child abuse among physicians. A decade ago there were few physicians expert in chemical dependency. But we learned. Most of us have attained competence in that important area. Similarly we need to become aware of family violence, child abuse and neglect. We need to learn the masks these problems wear. We need to search them out under the appearances of stress, depression, or behavioral disorder. We need to report. We need to offer, and to demand, appropriate responses to and for our patients. Physicians cannot provide the whole answer; we must provide our part of it.

What happens when you report a case of child abuse? New sets of actors enter, with their own scripts. Now who is in charge? What are the relationships? Working out questions like these, among all the actors, is what *Responses* is all about.

Last year, our Hennepin County Medical Society helped to create an organization to do something helpful about child abuse: Responses to End Abuse of Children, Inc. *(Responses)*. It is bringing together new forces from business and from health care to work in cooperation with the public agencies and with the judicial branch. These forces are building. Constructive change is in the air. Society's responses to child abuse are going to become more appropriate, more consistent, more helpful.

Minnesota public policy on the reporting of child abuse is to protect children whose health or welfare may be jeopardized through physical abuse, neglect or sexual abuse; to strengthen the family and make the home safe for children through improvement of parental and guardian capacity for responsible child care; and to provide a safe temporary or permanent home environment for physically and sexually abused children.

More physicians need to become a part of this movement. Not experts. Students. Practitioners who think about child abuse, look out for it, attain experience, cooperate with the other players, and contribute to the development of answers. *Responses* is organized medicine's own offspring. It is growing. It needs more doctors to become involved. Maybe you. Think about it!

If you would like to know more or become involved in *Responses*, give Lynn Gruber a call at (612) 623-3030.

How do I report child abuse? Two ways. (1) Through a Law Enforcement Agency — Call your local police or sheriff's office. (2) Through Child Protection Service. Call your County Welfare Officer.

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*Surgeon, Minneapolis and President, Responses to End Abuse of Children Inc.

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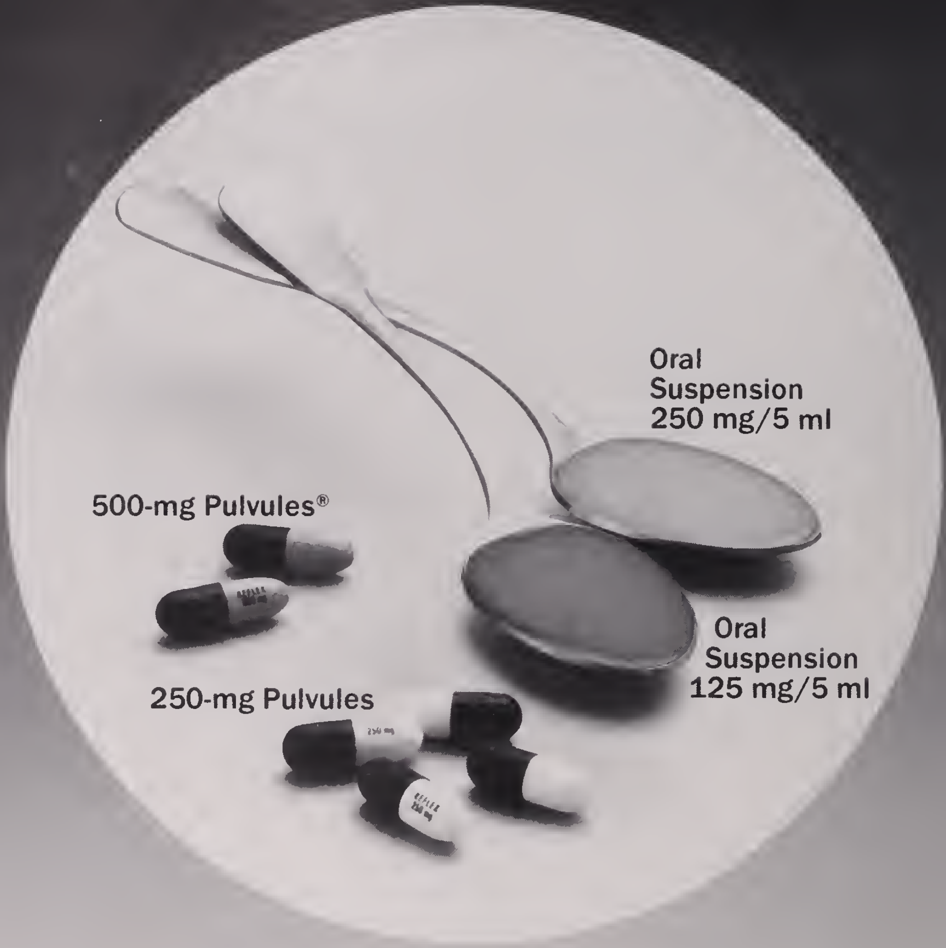

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History

Herman Boerhaave

His Ideas on Health and Disease in the 18th Century

RAYMOND C. BONNABEAU, JR., M.D., Ph.D.*

ONE OF THE MOST influential physicians of the 18th Century was Herman Boerhaave. Considered by many to be "the general (medical) teacher of all Europe," Boerhaave was born at Voorhout in the year 1668. Originally destined for the church, he studied theology at Leyden, receiving his doctor's degree in philosophy in Leyden in 1690. Later, changing his mind, he became a physician, receiving his doctor's degree (in speculative philosophy) at the University of Harderwyk in 1693. Locating himself at Leyden, he became lecturer in the theory of medicine in 1701, and professor of medicine and botany in 1709.

While he practiced medicine along the traditional therapeutic lines of the day, he did develop a theory of medicine that was propagated after him by his famous pupils, Gerhard van Swietans and Albrecht von Haller.

He held Thomas Sydenham in great esteem and was no less active than Sydenham in turning back to the bedside for the general examination and clinical treatment of his patients. To this end, he had twelve beds set aside (six for men and six for women) at St. Augustine's hospital, which he used for medical student teaching. This daily teaching routine consisted in a perusal of the patients' history, a careful examination, and inspection of their bodily excretions. For the latter, Boerhaave used a hand lens. He also used a thermometer. Although in 1725 he developed a case of extremely painful gout and had to give up many of his teaching chores, he did continue his clinical teaching until his death in 1738.

Boerhaave wrote two large works (which for so famous a teacher is a small number), *Institutiones medical* (1708) and the *Aphorismi de cognoscendis et curandis morbis* (1709). His *Institutiones* went through 15 Latin editions, while his *Aphorismi* went through 10 Latin editions, also undergoing one English and two French translations.

Boerhaave's system of medicine was essentially a compilation of some of the theories of the iatrochemists and the iatromechanics. Thus, he felt the body was composed of two essential parts, the fluids (a variety of them), and the solids, primarily fibers. Disease for him, then, revolved around the relationship between these two states. The fluids, Boerhaave felt, were the humors, but instead of postulating four main humors as the Greeks had done, he felt that all of them were actually different parts of the blood itself. Crude microscopic observations of the blood had revealed the red blood cells and had also shown (though it was not understood) their hemolysis in water. Following this hemolysis, particles were seen of a diminishing magnitude, and, it was reasoned, the size determined the vessel through which a particular particle flowed. Thus, Boerhaave knew that the humor, blood, was not a homogeneous substance as the Greeks and Galen had believed it to be, but was made up of red as well as other globules. Therefore, to him, yellow bile was merely blood serum; phlegm was blood serum that had been altered after standing; while black bile was nothing more than part of the dark blood clot (crassamentum) that formed after its removal from the body.

Boerhaave distinguished the blood vascular system much as it is today, with some major differences. Thus, the arteries entered smaller arteries to capillaries to venules to veins. This system he called the sanguiferous vessels, since they carried all the red blood components. Emanating from this system were branches so small that they could not admit the red blood globules. They did, however, admit the smaller particles. These were termed serous arteries, and they flowed out into their own serous veins. There was also a third or lymphatic system. These lymphatic arteries were so small that they were unable to accept serous particles, but did take those that were smaller. These emptied into the lymphatic, serous, and finally the sanguiferous veins.

Boerhaave felt that arteries were composed of smaller vessels each, in turn, formed from smaller vessels, until the smallest vessel was composed of elementary particles. Therefore, these variously sized vessels had particles flowing through them of a different magnitude.

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*Surgeon, St. Paul, Minnesota.

Glands, he felt, were hollow membranes with small arteries acting as secreting agents.

The nervous system was considered to be a glandular system. Nerve juice was separated from the blood in the medulla, then sent down the nerves as a succus nerveus.

The heart was considered composed of involuntary muscles and, therefore, controlled via the cerebellum, while the voluntary muscles were controlled from the cerebrum. As a continuation of the nervous system, the muscles were fine expansions of the smallest nerves. These terminations formed the active contractile portions.

As mentioned earlier, health or disease was considered faulty interaction between the body's fluids and solids. Solid bodily fibers could be, for instance, too lax or too rigid, which in turn could be a result of a problem with either the fluids or solids. A weak fiber could, then, be caused by improperly digesting foods (fluids) or due to a poor action of solids on the liquids (mechanical cause).

Boerhaave felt that the humors depended to a large extent on the food eaten. If the material was not assimilated properly, it could form the degenerated material it normally might form outside the body, i.e., it would retain its essential crudity. There were three humoral changes related to foods. First was an "acid acrimony." This was produced by foods that normally turn acid (defined as something that tasted or smelled sour and that effervesced when it met in alkaline salt). This food produced belching and heartburn. The treatment: Counteracting foods, especially those of an alkaline nature. A second humoral disturbance was caused by a mucinous diet, high in glutens. This might produce vomiting, indigestion, and anorexia. Treatment: meats and broths. A third type developed from an alkaline cause, with certain foods becoming putrid. Alkaline material was considered to have a sharp taste and was resistant to fire. This problem produced foul breath and bilious diarrhea. Treatment: Provide foods high in acid.

Inflammation was another chemical state that was very common. It occurred when two basic elements existed: (1) obstruction of the smaller sanguinous arteries, and (2) an increased flow of blood to the part acting on the obstructed material. The classic signs of inflammation were thus explained as swelling and redness due to the vascular obstruction, pain due to the local distention, and heat due to the movement of the particles and bodily solids against one another.

Inflammation could subside with four outcomes: (1) Resolution, where the obstructing mass dissolved. (2) Suppuration, with pus developing. (3) Gangrene, where the tissue became blackened and insensitive. (4) Scirrhus, which usually affected a gland. Since the blood supply was on the outside of the gland, as the gland became swollen, the blood could not have an effect on its resolution. This inflamed area would have to be extirpated.

Treatment, therefore, was developed to afford relief to an inflamed part and was based on, as it were, sound principles. Bleeding and cathartics both reduced fluid volume and therefore the volume of the actual blood at the site of inflammation. Cupping, mustard plasters, and warm baths tended to accomplish the same thing by drawing blood away from the inflamed area. Production of a chronic inflammation in another area of the body also was felt to produce the same effect.

As time went by, Boerhaave's ideas were modified by his students and others as new facts came to light, but his concepts of disease were primarily those used in Europe throughout the 18th Century.

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Pediatric Days sponsored by the Mayo Clinic will be held April 18-19, 1985. The Amberg-Helmholz Lecture, a feature of Pediatric Days, will be given by Richard Goldbloom, M.D., Chairman of Pediatrics, Halifax, Nova Scotia. Presentations dealing with problems which occur in the practice of Pediatrics will be made by members of the staff of the Mayo Clinic. For information, write Robert H. Feldt, M.D., Program Director, Mayo Clinic, Rochester, Minnesota 55905.

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Severe Hyponatremia in An Eighty-One Year Old Female

D. K. OHRT, M.D., EDITOR*
GREGORY RUTECKI, M.D., DISCUSSANT†

THIS 81-YEAR-OLD Caucasian female was admitted on 1/17/83 with complaints of weakness, nausea and loose stools of several days duration. Both she and her family attributed the symptoms to the "flu."

A left modified radical mastectomy had been performed in February, 1975, for adenocarcinoma. There was a local recurrence on the left chest wall identified in April, 1981. She was treated with Tamoxifen from April, 1981 to May, 1982. There was a long term history of mild hypertension for which she took Zaroxolyn (metholazone). A general chemistry profile was normal in May, 1982.

Physical Findings

Her blood pressure was 160/60 mm/Hg. and pulse 55/min. She was described as an elderly woman in mild distress complaining of significant nausea. The skin was dry. Eye, ear, nose and throat examination was normal. There were no neck masses. The left breast was surgically absent. Skin nodules could not be identified nor was there evidence of adenopathy in the left axilla. The cardiac rhythm was regular. A systolic murmur was identified but not futher described. No organomegaly could be identified on abdominal examination. The rectal and pelvic examinations were performed later and were described as negative. Peripheral pulses were normal. The neurological examination was within normal limits.

Admission Laboratory Data

The admission CBC included a hemoglobin of 10.8 gm/dl. with normocytic, normochromic, red blood cells, white blood cell count of 9,800/mm^3 with normal differential count and a sedimentation rate of 32 mm/hr. A chemistry profile drawn at 7 A.M. 1/18/83 included the following values: glucose 154 mg/dl (80-115), calcium 8 mg/dl. (8.6-10.5), inorganic phosphorus 1.88 mg/dl (1.5-6.8), total bilirubin 1.17 mg/dl (0.0-1.0), creatinine 0.87 mg/dl. (0.5-1.2), total protein 5.02 gm/dl. (6.3-8.3), cholesterol 168 mg/dl. (140-310), uric acid 1.05 mg/dl. (2.405.7), alkaline phosphatase 42 IU/L (23-71), SGOT 40 IU/L (3-22), LDH 123 IU/L (52-149), sodium 106 mEq/L (136-145) and potassium 2.3 mEq/L (3.6-5.0).

Clinical Course

After the laboratory reported the low serum sodium level, the patient was started on Normo-Sol M at 100 ml/hr. with 40 mEq. of potassium chloride added to the IV. Electrolytes done at 7 A.M. on 1/19/83 included sodium 105 mEq/L and potassium 3.7 mEq/L. At mid-day hypertonic saline was requested but was not available. Normal saline was continued at 75 ml/hr. plus 20 mg. of furosemide. The furosemide was repeated at 6 P.M. and 7 P.M. Electrolyte values at 5 P.M. were sodium 106 mEq/L, potassium 3.2 mEq/L and chloride 68 mEq/L. At 10 P.M. the normal saline was increased to a rate of 200 ml/hr, accompanied by multiple doses of furosemide. At 7 A.M. on 1/20/83 serum electrolytes included sodium 114 mEq/L, potassium 2.9 mEq/L and chloride 73 mEq/L. The treatment plan continued with normal saline with 40 mEq. of potassium chloride/L to be given at 200 ml/hr. with furosemide, 20 mg. every two hours. At 9 A.M. 3% sodium chloride was started at 100 ml/hr. with 20 mEq. of potassium chloride added to each 500 ml. At 12 noon the patient was described as sleepy but responding. Shortly after that she ate some broth followed by projectile vomiting. The 5 P.M. electrolyte values included sodium 132 mEq/L, potassium 3.4 mEq/L, and chloride 90 mEq/L. At 6 P.M. the patient was easily aroused but by 8 P.M. was difficult to arouse but recognized family members. By 9 P.M. she was difficult to arouse with twitching and shaking of her arms. Between 9 A.M. and 10:15 P.M. 1200 ml. of 3% sodium chloride had been administered. The 10 P.M. electrolyte values included sodium 144 mEq/L, potassium 3.1 mEq/L, and chloride 99 mEq/L. By 10 P.M. the patient did not respond to verbal commands, had intermittent twitching of the arms and tense musculature. Serum electrolytes at midnight were sodium 120 mEq/L, potassium 2.7 mEq/L, and chloride 78 mEq/L.

On 1-21-83 the 7 A.M. sodium was 146 mEq/L, potassium 3.3 mEq/L, and chloride 100 mEq/L. Throughout the remaining hospital course the patient remained unresponsive. The serum electrolytes remained stable. She expired on 2/10/83.

---

*Pathologist, Mankato, Minnesota and Chairman, Board of Trustees, Minnesota Medical Association

†Assistant Professor of Medicine, Northeastern Ohio College of Medicine.

Discussion

Dr. Gregory Rutecki* — First, let me compliment Dr. Ohrt for choosing hyponatremia as the topic of this discussion. It's a common complaint among practicing physicians that grand rounds and clinicopathological conferences often discuss rare diseases and thus are not applicable to daily practice. Hyponatremia presents no such problem. Its relevance to the daily practice of medicine can be highlighted by four pertinent facts: (1) some estimates say as many as 20% of inpatients with a variety of primary diseases have hyponatremia at some time in their hospital course. (2) this entity may well be the most common consultation obtained of a nephrologist in the United States. (3) this disease can often be iatrogenic. (4) even though hyponatremia is thought of as a benign disease, there is a significant morbidity and mortality related both to delayed diagnosis and improper therapy.

I have outlined this talk in Table 1 and will give you an overview of how I like to approach hyponatremia.

TABLE 1

- I. Definition — Why hyponatremia should be thought of as hypoosmolality
- II. Review of normal water excretion to understand where defects lead to problems:
  - A) Gfr/RPf = filtration fraction
  - B) ascending limb loop of Henle
  - C) distal diluting segment
  - D) arginine vasopressin levels
- III. Hyponatremia: approach to diagnosis by identifying 3 categories
  - A) volume deficit
  - B) slight volume excess (no edema)
  - C) edema — volume excess
- IV. Spurious hyponatremia
- V. Signs & symptoms to identify
- VI. When to treat — end organ damage (brain-cerebral edema, pontine myelinolysis)
- VII. Therapy
  - A) acute
  - B) chronic

Definitions

It's always been my feelings that the term hyponatremia is not ideal for this syndrome. As we will see, hyponatremia can be characterized by too little, just enough, or too much sodium and the real abnormality is an excess of water for the available sodium. Therefore, hypoosmolality may be a much more suitable term.

If too much water is the underlying abnormality, the question as to how a patient gets this excess of water must be answered. This is particularly germane when it's well known that people can excrete as much as 20 liters of water a day in uncomplicated situations.

Review of Normal Water Excretion

There are four critical areas in the nephron responsible for the excretion of a water load. They are as follows: (1) glomerular filtration rate and renal plasma flow or the so-called filtration fraction (Gfr/RPf); (2) chloride transport in the thick ascending limb of the loop of Henle; (3) the amount of filtrate presented to the distal tubular diluting segment and the activity of this segment to extract sodium in excess of water, and (4) the absence or presence of arginine vasopressin at the cortical collecting tubule.

Filtration fraction is the fraction of what is filtered over what is presented to the kidney as plasma flow. Normal values are approximately 20%. In a contracted circulatory state, such as after prolonged vomiting or during congestive heart failure, renal plasma flow decreases to a greater degree than glomerular filtration rate. The filtration fraction increases.

As a result, more filtrate enters the proximal tubule on a percentage basis and because of two changes in proximal tubular dynamics, more filtrate is reabsorbed. Change 1 is that efferent capillary blood has a higher oncotic pressure since a higher percentage of plasma has been filtered into the proximal tubule without albumin. The remaining albumin is concentrated in the efferent capillary stimulating increase in proximal tubular reabsorption. With change 2 the luminal pressure assisting reabsorption in the proximal tubule is increased because more fluid is filtered and less is retained in glomerular capillaries. The reason that this is so critical to free water clearance relates to the fact that all reabsorption in the proximal tubule is isotonic. If free water is administered in a volume contracted state more will be reabsorbed proximally in spite of the fact that it will lead to more dilution.

It is well known that fluid entering the distal tubule is hypotonic to plasma. This occurs by virtue of the fact that the ascending limb of the loop of Henle creates a gradient in tonicity contingent on active chloride transport. If this gradient does not occur, the ability to excrete a water load is diminished. It is critical to note that paralysis of this ascending limb chloride pump can occur during the administration of loop diuretics.

After the ascending limb, the filtrate enters the part of the nephron that is most critical for net water transport. These are the distal diluting sections including the distal tubule and collecting ducts. Further reabsorption of sodium in excess of water occurs and this pump can be decreased by Zaroxolyn group diuretics. In addition, in this section of the nephron if a dilute urine is to be produced, arginine vasopressin levels must be suppressed or absent.

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Since the action of antidiuretic hormone is to increase solute free water reabsorption (TcH_20), it is critical to determine stimuli that either increase or decrease ADH release. The most important point for the clinician to realize is that there are two different types of receptors responsible for the release of arginine vasopressin. There is the osmotic receptor and the non-osmotic group of receptors. Small percentage changes in osmolality increase plasma arginine vasopressin levels as shows in Figure 1 with a linear relationship.

But even more important, in states of stress the body favors volume over composition. If the serum sodium is 120 and your patient is simultaneously volume depleted, the antidiuretic hormone level will rise because of the volume depletion. In spite of the fact that this rise will cause progressive dilution it is deemed appropriate for the organism to preserve volume. This release of ADH is shown in Figure 1. Many different nonosmotic stimuli are known. Please refer to Table 2.

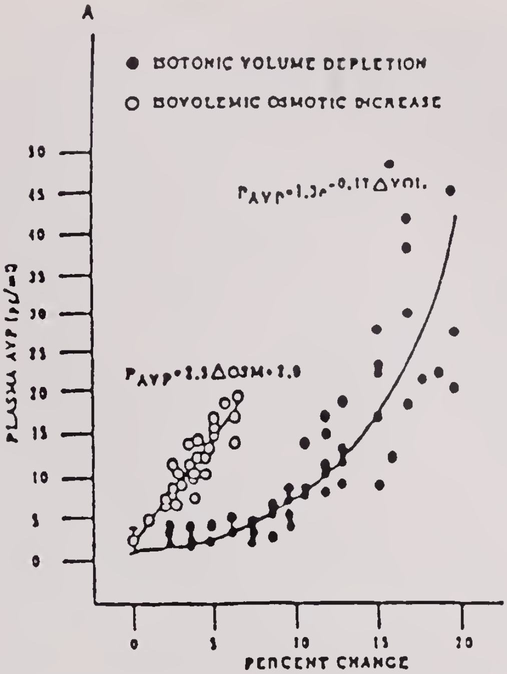

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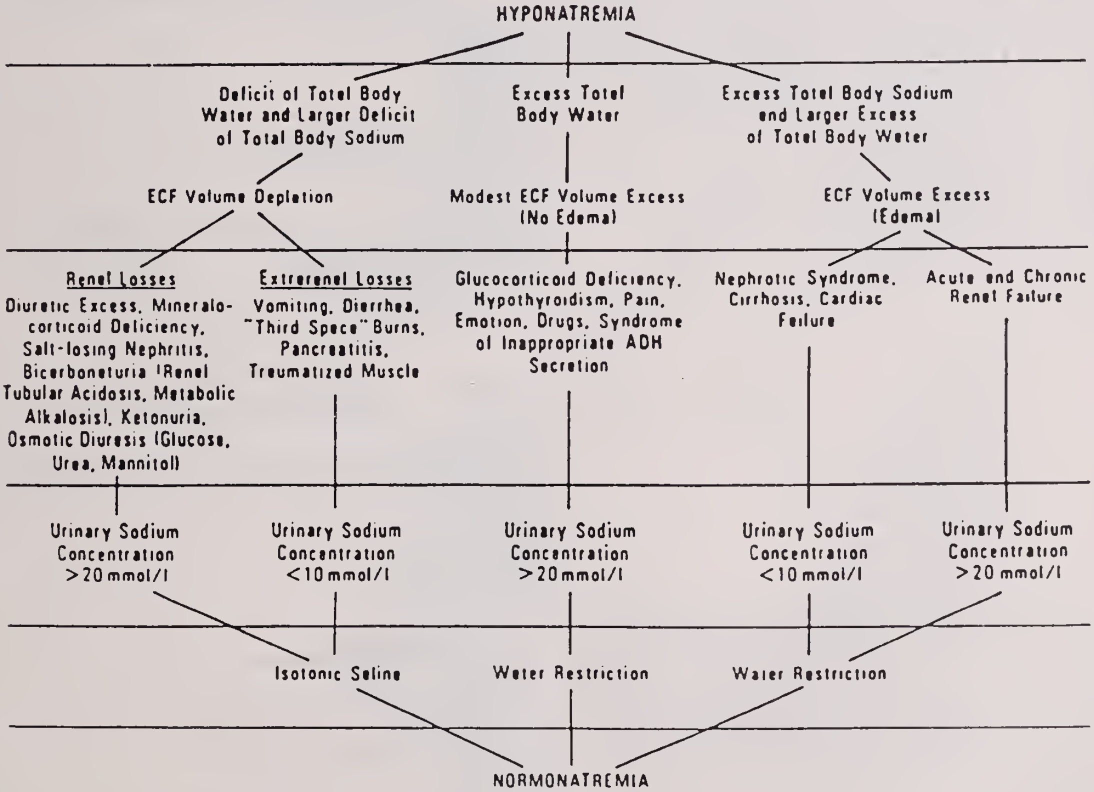
Figure 1


HYPONATREMIA
Deficit of Total Body Water and Larger Deficit of Total Body Sodium
Excess Total Body Water
Excess Total Body Sodium and Larger Excess of Total Body Water
ECF Volume Depletion
Modest ECF Volume Excess (No Edema)
ECF Volume Excess (Edema)
Renal Losses
Diuretic Excess, Mineralocorticoid Deficiency, Salt-losing Nephritis, Bicarbonaturia (Renal Tubular Acidosis, Metabolic Alkalosis), Ketonuria, Osmotic Diuresis (Glucose, Urea, Mannitol)
Extrarenal Losses
Vomiting, Diarrhea, "Third Space" Burns, Pancreatitis, Traumatized Muscle
Glucocorticoid Deficiency, Hypothyroidism, Pain, Emotion, Drugs, Syndrome of Inappropriate ADH Secretion
Nephrotic Syndrome, Cirrhosis, Cardiac Failure
Acute and Chronic Renal Failure
Urinary Sodium Concentration >20 mmol/l
Urinary Sodium Concentration <10 mmol/l
Urinary Sodium Concentration >20 mmol/l
Urinary Sodium Concentration <10 mmol/l
Urinary Sodium Concentration >20 mmol/l
Isotonic Saline
Water Restriction
Water Restriction
NORMONATREMIA

Adapted from *Kidney International* (Vol. 10:pp. 117-132, 1976) with permission.

Figure 2

Categories of Hyponatremia

With these four physiologic mechanisms in water metabolism as a background, let's apply physiology clinically and review the three different groups of hyponatremia. These three groups are outlined in Figure 2 and represent: hypoosmolality in the setting of volume contraction and a decrease in total body sodium stores; hypoosmolality occurring in the setting of a slight excess in volume and finally hypoosmolality associated with a marked excess of volume with peripheral edema.

In the volume contracted group, identification is based on a combination of clinical history, physical exam findings, evaluation of urine electrolytes and finally if the answer is not obtained, measurement of a decrease in wedge pressure by Swan-Ganz catheterization. Clinical history helps if there is associated prior diuretic use, nausea and vomiting or any other features that identify patients as volume depleted. Physical exam is critical and the most important aspect is supine and upright blood pressures. A drop in blood pressure identifies people who are 15% contracted in extracellular volume. Urine can then be sent for urine electrolyte data on spot specimens. One would like to review sodium, creatinine and in select instances chloride and potassium values. People in this group have instances of both high and low serum sodium excretion. Further refinement of urine sodium data can be obtained by calculating a fractional excretion of sodium which is detailed in Figure 3. A fractional excretion of less than 1% is very suggestive of severe volume depletion. In addition, a urine chloride that is low can identify the group of contraction alkalosis from persistent vomiting.

`Fractional Excretion of Sodium`

$$\frac{\dfrac{\text{Urine Na}}{\text{Serum Na}}}{\dfrac{\text{Urine creatinine}}{\text{Serum creatinine}}} \text{ X } 100$$

Figure 3

Next is the group of modest extracellular space excess. One can see it contains diverse diseases such as hypothyroidism, emotional ADH release and also contains the syndrome of inappropriate ADH. This entire group is identified by clinical history and also by a high urine sodium excretion.

Note also that numerous drugs used clinically can cause a syndrome of hyponatremia. The drugs can

TABLE 2

Stimuli

1. **Osmotic**
   Contracted intracellular volume of osmoreceptor neurons due to hyperosmolality extracellular fluids (water loss or infusions of hypertonic solutions of molecules that do not freely permeate the blood-brain barrier [sodium chloride, mannitol]).
2. **Nonosmotic**
   - **a) Decreased arterial pressure (? pulse pressure) in carotid and possibly aortic baroreceptors, resulting from vascular or extracellular volume contraction or fall in cardiac output.**
   - **b) Decrease in tension in the left atrial wall and great pulmonary veins, because of reduced intrathoracic blood volume (such as blood loss, quiet standing, upright position, and positive-pressure breathing).**
   - **c) Pain**
   - **d) Psychosis**
   - **e) Increased temperature of blood perfusing hypothalamus.**
   - **f) Drugs (acetylcholine and other cholinergic drugs, morphine, barbiturates, nicotine, adrenergic agents), chlorpropamide, clofibrate, carbamazepine, cytoxan, vincristine.**
   - **g) Carotid body chemoreceptor stimulation by hypoxia or hypercapnea.**
   - **h) Stimulation of the renin-angiotensin system.**

TABLE 3

Stimulation of Vasopressin Release or Increased Sensitivity to Peripheral Action

Chlorpropamide
Clofibrate
Cabamazepine
Cytoxan
Vincristine
Tricyclic antidepressants
Butyrophenones (haloperidol)
Phenothiazines
Nicotine
Monoamine oxidase inhibitors (tranylcypromine)
Opiates and enkephalins
Some anesthetic agents

TABLE 4

Differential Diagnosis of SIADH

Malignancies
Carcinoma of lung, duodenum, pancreas, bladder ureter and prostate gland
Thymoma
Lymphoma
Ewing's sarcoma
Mesothelioma

Pulmonary Disorders
Viral and bacterial pneumonia
Pulmonary abscess
Tuberculosis
Aspergillosis
Positive pressure breathing
Asthma
Pneumothorax
Cystic fibrosis

(Continued on next page)

Table 4
Differential Diagnosis of SIADH *(continued)*

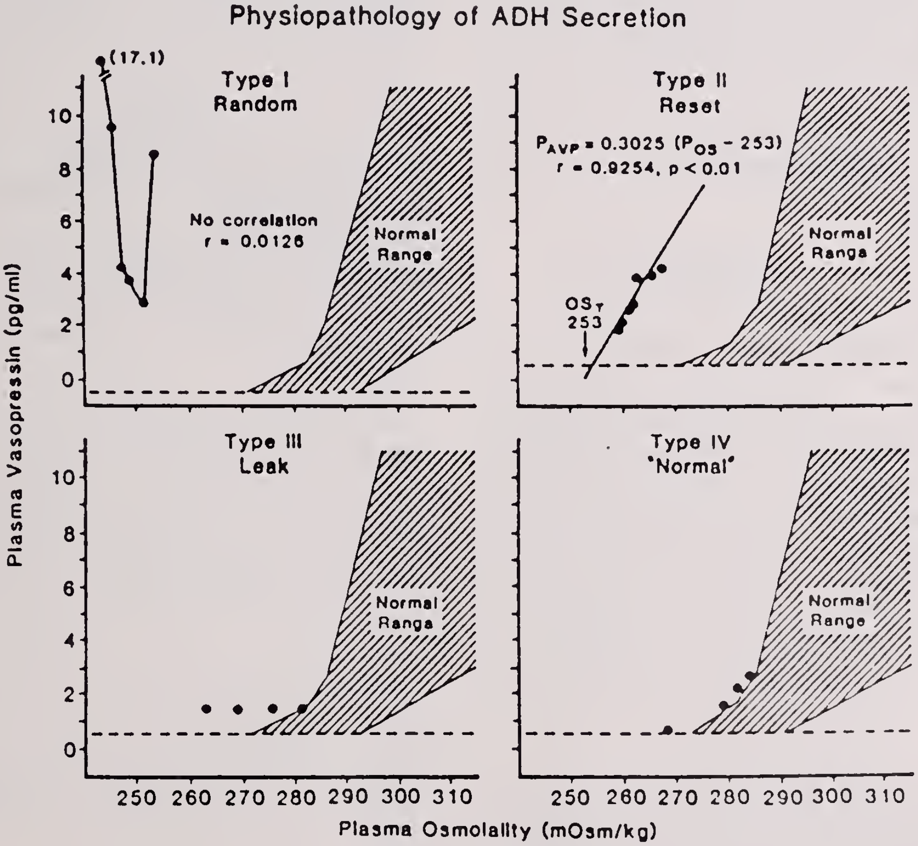
Central Nervous System Disorders
Encephalitis (viral or bacterial)
Meningitis (viral, bacterial, tuberculous, and fungal)
Head Trauma
Brain abscess
Brain tumors
Guillain-Barré Syndrome
Acute intermittent porphyria
Subarachnoid hemorrhage
Subdural hemotoma
Cerebellar and cerebral atrophy
Cavernous sinus thrombosis
Neonatal hypoxia
Hydrocephalus
Shy-Drager syndrome
Rocky Mountain spotted fever
Dilirium tremens
Cerebrovascular accident
Acute psychosis
Peripheral neuropathy
Multiple sclerosis

increase ADH release centrally or increase sensitivity to its action at a distal tubule. See Table 3 for a complete outline of these drugs.

The features of the syndrome of inappropriate ADH include the absence of peripheral edema, the absence of contributing diseases such as Addison's disease or hypothyroidism, and a high urine excretion of sodium in a setting where urine osmolality is inappropriately high for serum osmolality. The differential diagnosis is outlined in Table 4.

Recently, other identifying characteristics of SIADH have been found and these include hypouricemia, and low BUN and creatinine values. Beck reported 16 of 17 patients with SIADH who were hypouricemic with urate concentrations less than 4 mg/dl. In contrast, 13 patients with other causes of hyponatremia had values equal to or greater than five.[1] Decaux reported very similar findings in regard to a low blood urea nitrogen.[2]

Many new concepts about this syndrome have been made apparent from the work with a radioimmunoassay of arginine vasopressin performed by Dr. Gary Robertson.[3] He has characterized the pathology of SIADH into four separate groups[4] Figure 4 provides further details for identifying these different groups.



Edited by Tolis G, et al, New York, Raven Press, 1979, pp 247-260, Reproduced with permission from Raven Press.

Figure 4

Finally, the last group of hyponatremia is the large sodium excess group with edema. The traid of congestive heart failure. nephrotic syndrome and cirrhosis fit here. As you would have expected, the inability to excrete a water load in this group depends on alterations in renal hemodynamics with an increase in filtration fraction and ineffective circulating volume stimulating the release of arginine vasopressin. Again, it should be remembered that this is not inappropriate ADH release but a release of ADH reacting to non-osmotic stimuli. Also, some degree of iatrogenic hyponatremia occurs to diuretic actions on the ascending limb and the distal tubule.

Spurious Hyponatremia

At this point it's also critical to note that hyponatremia can occur in a spurious or pseudohyponatremia group. This occurs on the flame photometer and Table 5 identifies the syndromes associated with this. With hyperglycemia, for every 100 mg. increase in glucose, the serum sodium should drop 1.6 mEq/L. Mannitol can have the same effect in causing spurious hyponatremia. Identification of this syndrome can be based on knowledge of the offending agent as well as the simultaneous measurement of the serum osmolality which will be normal to high. In true hyponatremia, serum osmolality is always low.

TABLE 5

Spurious Hyponatremia

Hyperglycemia
Multiple Myeloma
Lipids **Serum osmolality Normal**
Mannitol

Pertinent Signs and Symptoms

The symptoms of hyponatremia include nausea, emesis, muscular twitching, abdominal cramps and all degrees of central nervous system aberrations from mild lethargy and confusion through convulsions and coma. The central nervous system problems are secondary to brain edema as well as a syndrome called pontine myelinolysis.[5] It appears that the pons is much more sensitive to the retention of brain water than other areas of the brain. Because of this there can be actual lysis of myelin in the pons and long tract signs.

When to Treat

The next important question for the physician is when these signs and symptoms occur, how and when does he determine the need for therapy. Should he use water restriction, normal saline or hypertonic saline. The key concept that occurs here runs consistently through nephrology. That concept is that patients with manifest end organ damage deserve aggressive and immediate therapy. Hyponatremia causes end organ damage by affecting the brain so that any type of CNS dysfunction requires treatment with hypertonic saline. Water restriction is adequate in the setting of hyponatremia when no signs of brain dysfunction can be elicited. Normal saline can be used in the group with volume depletion and again if they do not have signs of CNS dysfunction.

Therapy: Acute and Chronic

Calculations of the amount to be administered are based on the fact that hypoosmolality is a total body water space disorder. Because of this 60% of body weight or total body water is the space to be corrected. See Table 6 which reviews a sample calculation for a classic 70 kilogram adult. The time frame of this administration is critical because rapid correction can lead to aggravation of brain swelling and death. I treat with caution and try to correct the abnormality somewhere between 24-36 hours. In that period of time, the serum sodium must be followed closely in case correction is proceeding too rapidly or too slowly.

TABLE 6

Treatment

70 KG Adult X .6 — 42 Liter H_20 Space
110 —> 130mEq/liter = 20mEq increase X 42L = 840mEq Na needed
500mEq of Na in 1 Liter 3% Saline
840mEq given in 24hrs to raise Na 110-130
35mEq Na/hr (35 × 24 = 840mEq)
70 cc of 3% = 35mEq Na
So 70 cc of 3% per hr for 24 hrs will raise serum Na from 110-130mEq/liter

It is important to note that studies by Dr. Allen Arieff have shown that there are tremendous inherent dangers in not correcting symptomatic hyponatremia.[6] Gradual and progressive brain damage can occur and this has been shown in both laboratory animals and in patients. Cautious use of hypertonic saline has improved both prognosis and recovery in this setting.

Lasix can be used in patients who are threatening to develop congestive heart failure.[7] If someone is this tenuous, consideration can be given to Swan-Ganz catheterization, hypertonic saline replacement and use of Lasix to maintain wedge pressure below 10 mm/Hg.

Chronic treatment of hyponatremia particularly in cancer patients with SIADH can be very difficult with strict water restriction. Decloymycin, a tetracycline antibiotic, causes a nephrogenic diabetes insipidus and blocks the action of antidiuretic hormone in the collecting tubule. It can be used chronically to block the altered pathophysiology of ADH in the nephron.[8]

Differential Diagnosis

And finally using this discussion as a framework, I would like to approach today's patients with applied physiology. I think from the descriptions and physical exam, this patient probably belonged to the group of modest vascular expansion with hyponatremia. Her urine sodium is appropriate, and her blood pressure did not seem to be decreased though I would have recommended a tilt test on admission. I think her illness was acute and of recent onset. The patient had cardinal features of SIADH with high urine sodium excretion, absence of or minimal edema at best, apparent absence of hypothyroidism and Addison's disease as well as a simultaneous low serum uric acid and creatinine. Zaroxolyn may have added to the development of hyponatremia because of its effect on the distal tubule. However, the true syndrome of malignant hyponatremia from thiazide or Zaroxolyn group diuretics has been described by Drs. Ashraf and Arieff and this often occurs within the first few weeks of therapy.[9] Since she had been on Zaroxolyn for a long time and not had hyponatremia before, I think that this diuretic alone would not explain her severe hyponatremia.

It is my impression that this lady has the syndrome of inappropriate ADH but the etiology is a little less clear cut. Breast carcinoma is not one of the cancers associated with SIADH and in reality her cancer did not seem to be widely disseminated. I do not think she had meningeal involvement or any other brain involvement. Adrenal metastases are common in breast carcinoma but adrenal insufficiency is extremely uncommon. I do not think her hyponatremia was present long enough to cause central pontine myelinolysis and do not think she has good evidence of a second tumor such as an oat cell carcinoma causing SIADH. But is there precedent for idiopathic SIADH? First, Martinez-Maldonado described a case of "idiopathic" SIADH in a 52 y.o. woman and seven months later she developed clinically apparent small cell cancer of the lung.[10] Very recently, Goldstein and Associates reported a "Type C" SIADH without contributing primary disease.[11] In their paper they reviewed ten prior cases of apparent "idiopathic" SIADH, six of which occurred in elderly patients (greater than 60 years). It may be that old age particularly when associated with other situations that interfere with water excretion (Zaroxolyn, nausea) is enough to cause SIADH. I would have treated our patient with hypertonic saline because of her mental aberrations but would have set up a slower time course for correction so that a serum sodium of 130 would have been obtained somewhere between 24-36 hours after initial diagnosis. I would have followed her serum sodium data during replacement at four hour intervals to ensure there was neither too quick nor too slow a correction of her abnormality. I think her cause of death was rapid correction of hyponatremia with cerebral and some pontine edema.

Dr. Delwin Ohrt* — I want to emphasize a few points before discussing the pathology of this case. If the laboratory reports a low serum sodium, probably not expected clinically, a number of questions should come to mind. Could this be a simple laboratory error, either technical or clerical? Was the specimen drawn near the site of infusion of a hypotonic solution resulting in dilution? Does the patient have hyperlipidemia causing pseudohyponatremia? The latter is a fairly common observation when the sodium level is measured with the flame photometer but not a significant consideration when measured with an ion sensitive probe. Hyperproteinemia can also cause pseudohyponatremia but is an unusual problem clinically. The plasma becomes so viscous it is almost a gel by the time the elevated protein causes pseudohyponatremia.

High concentration of glucose or mannitol results in a low serum sodium which is not of clinical significance. This merely reflects a water shift due to another osmotically effective solute in extracellular fluid.

The end organ pathology caused by hyponatremia is not well defined nor is the pathophysiology which causes reported changes. The development of hyponatremia invariably results in cerebral edema which is more pronounced in the white matter than gray matter. The patient who dies later after correction of hyponatremia may fail to demonstrate any gross or microscopic evidence of pathologic change in the brain. The edema, presumable resulting in serious brain damage, may have totally subsided.

In 1979 Messert et al. described central pontine myelinolysis.[5] This disorder occurs in a setting of chronic illness, alcoholism and electrolyte derangement. The pons is principally affected in the human but other areas may also demonstrate demyelination in severe cases.

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*Pathologist, Immanuel-St. Joseph's Hospital Mankato, MN

Kleinschmidt-DeMasters and Norenberg observed twelve patients who developed central pontine myelinolysis after rapid correction of hyponatremia with hypertonic saline.[12] They set up an experimental model, which included hyponatremic control rats allowed to correct by normal dietary intake of sodium, normal rats given hypertonic saline, and hyponatremic rats rapidly corrected with hypertonic saline. The first two groups failed to develop focal demyelination. However, the third group developed typical changes where highly vascular gray matter was intermixed with white matter. The author suggests that rapid correction with hypertonic saline may play a significant role in the development of central pontine myelinolysis. The pathophysiological mechanisms suggested include metabolic alteration of oligodendrocytes and focal severe vasogenic edema secondary to osmotic opening of the blood brain barrier. Additional research will be needed to verify these observations.

The elderly lady discussed today presented with profound hyponatremia. Clinical evaluation failed to demonstrate a clear cut underlying cause. Her death was due to bilateral acute pneumonitis. The brain was not grossly edematous and on microscopic examination only focal areas suggestive of demyelination were observed. However, a more thorough sampling might have identified more significant areas of myelinolysis.

Our purposes in presenting this case was to discuss hyponatremia as a common clinical problem and to highlight developments in the study of pathology and pathophysiology of central nervous system damage presumed to be secondary to hyponatremia.

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*Acknowledgement. The authors want to express their sincere appreciation to Nancy J. Williams and Karen Simons for their assistance in typing this manuscript.

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Hypertensive Pulmonary Vascular Disease[*]

The Point of No Return

C.A. WAGENVOORT, M.D.[†]

TWENTY-FIVE YEARS ago the study of hypertensive pulmonary vascular disease entered a new era. In 1957 Jesse Edwards published in his Lewis A. Connor Memorial Lecture[1] the first systematic treatise of the functional pathology of the pulmonary vasculature. This work, that has had a great impact on subsequent studies in this field, opened with a quote from Henry Adams: ''A teacher affects eternity; he can never tell where his influence stops.'' Twenty-five years is no eternity, but it is sufficient to realize that the influence of Edwards as a teacher will last for a long time to come.

Over the years the scientific interest of Jesse Edwards has covered virtually all aspects of cardiovascular pathology and his experience has been laid down in numerous articles and books. I have had the privilege of being a student with him at the Mayo Clinic almost 25 years ago when I could profit from his great abilities as a teacher and as a scientist.

At that time I was particularly involved in the study of pulmonary vascular pathology, a subject that has kept my interest ever since, so that in fact it was for me a point of no return. Today I would like to pay attention to some new developments in this field.

Hypertensive pulmonary vascular disease is far from being an entity. The etiology varies widely and with it the pathogenesis and the type of lesions in the lung vessels. Classifications have been made according to clinical aspects, etiology and morphology. I may be excused for preferring a morphologic classification.[2] The pattern of pulmonary vascular lesions is usually so characteristic that it may indicate the cause of pulmonary hypertension or more often a broad group of causes.

On the basis of these alterations it can be established whether we are dealing with hypoxic or pulmonary venous hypertension, pulmonary veno-occlusive disease or plexogenic pulmonary arteriopathy. The latter pattern is found in congenital heart

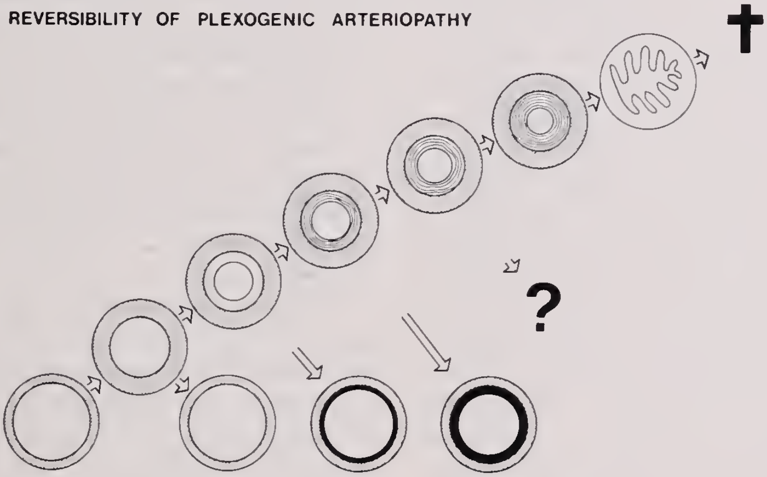

Figure — Schematic representation of sequence and reversibility of arterial lesions in plexogenic pulmonary arteriopathy. The sequence is represented by the ascending row from normal (left lower) through medial hypertrophy, cellular intimal proliferation, various degrees of concentric-laminar intimal fibrosis to the most severe alterations (here represented by a plexiform lesion) that eventually will lead to a fatal outcome. Reversibility, represented on the lower row, is possible when there is only medial hypertrophy, additional cellular intimal proliferation or mild concentric-laminar intimal fibrosis. Severe intimal fibrosis and the more advanced lesions are irreversible. The point of no return is somewhere in between mild and severe intimal fibrosis (indicated by question mark).

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The second Jesse E. Edwards Lecture, 16 September 1982, Saint Paul, Minnesota disease with a shunt but also in the classical type of primary pulmonary hypertension.

Any form of pulmonary hypertension may be progressive as long as the cause is not eliminated. But if the cause is eliminated, what will happen then? Essentially our problem is "is hypertensive pulmonary vascular disease reversible and if so, to what extent?" It is clear that the answer to that question will depend to a great extent on the type of hypertensive pulmonary vascular disease and on the stage to which the disease has proceeded.

Elimination of the cause of pulmonary hypertension is often not possible. If chronic bronchitis has led to hypoxic pulmonary hypertension, the bronchial tree is likely to be so impaired that alveolar hypoxia will persist in spite of treatment. On the other hand if hypoxic pulmonary hypertension is due to enlarged adenoids as occasionally happens in children, adenoidectomy will cure both the upper airway obstruction and the pulmonary hypertension.[3] Similarly, elevation of pulmonary arterial pressure as seen in chronic mountain disease due to barometric hypoxia, will subside when the individual is moved to sea level.[4]

We know the type of vascular lesions in hypoxic pulmonary hypertension, although we have little direct information about their regression. Characteristically the alterations are confined or almost confined to the smallest lung vessels while they consist exclusively of an increase of smooth muscle. (Figure). This means that there is medial hypertrophy along with muscularization of previously non-muscular arterioles but also development of longitudinal smooth muscle bundles in these arterioles.[5] Similar changes are found in small veins.[6] Intimal fibrosis, in the sense of significant deposition of collagen and elastic fibers, is not part of hypoxic pulmonary hypertension. It is true that it often occurs in patients with chronic bronchitis and emphysema but the available evidence suggests that this is a reaction to inflammation and fibrosis of lung tissue rather than to hypoxia.

There is no direct evidence of regression of these pulmonary vascular changes in man but from experiments in rats exposed to hypoxia,[7] we know that regression is possible with a return of medial thickness to normal, within weeks after the animals having been restored to normal conditions. In other words, increase of vascular smooth muscle has a strong potency for regression. We are not aware that hypoxic hypertensive pulmonary vascular disease is irreversible at any stage of its development.

In pulmonary venous hypertension the situation is different in various respects. In mitral valve disease for instance — but the same applies to any other form of obstruction to the pulmonary venous outflow — not only the smallest vessels but also the larger muscular arteries and veins are involved.[8] Usually there is prominent thickening of media of arteries as well as of veins. There is however, also pronounced intimal fibrosis, particularly of medium-sized and larger muscular arteries, to a lesser extent of the veins but, as a rule, not of the arterioles. The intimal thickening tends to be irregular in shape, often eccentric; it may narrow the arterial lumen considerably but it does not cause total occlusion.

What does this mean in terms of reversibility of the lesions? Pulmonary venous hypertension can often be releaved. We expect that after commissurotomy for mitral stenosis, the smooth muscle hyperplasia of the lung vessels will regress. But what about intimal fibrosis?

It is not often that we have an opportunity for comparing the lung vessels in the same patient before and long after a successful commissurotomy but when it happens the difference is impressive. In a patient with mitral stenosis, in whom a lung biopsy was taken during commissurotomy there was very pronounced medial hypertrophy and intimal fibrosis of all arteries within the biopsy. He had no cardiac problems since that time but ten years later he died as a result of an accident and at autopsy it appeared that the media of the pulmonary arteries was restored to normal, while the intimal lesions could only be recognized as thin layers of dense collagen-rich fibrosis. All lumina were normally patent.

If this should be a general trend, and there is much reason to believe that this is the rule rather than the exception, it would mean first confirmation of our supposition that medial hypertrophy is reversible and second an indication that, at least in pulmonary venous hypertension, intimal fibrosis is a reversible alteration.

The rare pulmonary veno-occlusive disease affects primarily the small veins and venules.[8] These become occluded by thrombi and subsequently obliterate by organizing intimal fibrosis. We know very little about reversibility in this condition but it is unlikely that there is much tendency to regression, certainly when obliteration is advanced. Also since the cause is unknown, we can do little to eliminate it.

In contrast to the previous conditions, in embolic pulmonary hypertension only the arteries are involved, usually the larger ones, and not so much the arterioles. The veins are spared. The characteristic lesion is intimal fibrosis due to organization of thromboemboli, while in most patients medial hypertrophy is mild or even absent.[8] Regression, if it occurs, may follow two pathways. If there is a residual lumen, the organized thrombus may retract, leaving an eccentric patch of intimal fibrosis with a reasonable lumen. The other possibility is recanalization of the thrombus. The channels thus formed may widen so that intravascular fibrous septa result dividing the lumen in several compartments. The functional significance of these channels is probably limited. On the other hand, many muscular pulmonary arteries may become totally obliterated.

In other words, in embolic hypertensive pulmonary vascular disease there is only partial regression and it will depend on the extent of the embolic occlusion whether a significant decrease in pressure can be brought about or not. Of course we must keep in mind that very often it is not possible to prevent that there will be subsequent showers of small tromboemboli.

The last form of hypertensive pulmonary vascular disease to be considered is the one known to occur in congenital heart disease with a left-to-right shunt, for instance a ventricular septal defect. The morphologic pattern of vascular changes is very characteristic.[8] However, exactly the same lesions occur in primary pulmonary hypertension and sometimes in patients with cirrhosis of the liver or other hepatic injury.

The pattern can be briefly described as follows. First, only arteries and arterioles are affected, the veins are essentially normal. The changes involve both the smooth muscle and the intima. Early intimal lesions take the form of an active cellular proliferation. Subsequent deposition of collagen and to a lesser extent elastic fibers, leads to intimal fibrosis with a peculiar onion-skin arrangement. This intimal fibrosis has a tendency to obliterate arteries. Eventually other alterations develop with an even more ominous prognostic significance. These are fibrinoid necrosis of small arteries and the so-called dilatation lesions and plexiform lesions. The latter gave their name to the morphologic entity: plexogenic pulmonary arteriopathy.

Regression in this type of vascular disease can be studied following repair of a cardiac defect. The banding procedure of the pulmonary artery to create an artificial pulmonic stenosis as a protection against the elevated pressure, supplied an excellent opportunity. In 28 patients we could compare the lung tissue from a biopsy taken at the time of the banding with that becoming available during correction of the cardiac anomaly some years later.

Obviously, the regression varied according to the success of the banding procedure. Here I would like to summarize what happened in the majority of the patients. Medial thickness decreased considerably and often became normal. Cellular intimal proliferation, even if originally it gave rise to pronounced narrowing of the lumen appeared to be replaced by a thin layer of dense intimal fibrosis leaving the lumen patent. However, when there was onion-skin-like intimal fibrosis in the original biopsy and particularly when this was marked or occlusive, we found collapsed, obliterated arteries in the later material. In other words, the early lesions are reversible, in contrast to the more severe intimal alterations that will lead to what corresponds with Edwards' concept of a high resistance — low reserve pulmonary vascular bed.

This, however, is not the whole story. It is a well-known fact that in some patients pulmonary hypertension not only may not abate following corrective surgery of their cardiac defect but that the pressure will gradually rise with a fatal outcome. It is also known — and it conforms to our own experience — that the vascular changes at the time of a banding procedure in these instances were usually fairly pronounced, may become very severe. At autopsy many arteries appear to be occluded and the most advanced changes like fibrinoid necrosis and plexiform lesions have developed. It is clear that in these cases hypertensive pulmonary vascular disease not only did not regress but that there was progression of the disease, in spite of elimination of the presumed cause, that is the left-to-right shunt.

The consequences of this phenomenon are both obvious and worrying, not only for the clinician but also for the pathologist. Nowadays we regularly receive pre-operative open lung biopsies from patients with congenital heart disease with the question whether the state of the pulmonary vasculature will allow a correction of the defect or whether the vascular disease is too advanced.[9] In fact, this means that the pathologist must decide from his morphologic assessment whether the plexogenic arteriopathy is still reversible or whether it has proceeded to a progressive, self-perpetuating disease. Somewhere there is a point of no return. The problem is to identify that point.

I first would like to emphasize that in our experience the problem arises only in a minority of the cases. Usually we can establish with reasonable confidence that the patient is either operable because his lesions are fairly mild, or inoperable when they are clearly too advanced. It is the in between group of borderline cases that causes anxiety.

Since 1962 we received over 2000 lung biopsies from patients with congenital or acquired cardiac disease. Most of these were taken during cardiac surgery, the more recent ones were mainly pre-operative biopsies. About 600 of these were from patients with congenital cardiac defects. We are now in the process of tracing the follow-up in these patients. The preliminary results indicate that when there is only medial hypertrophy of pulmonary arteries at the time of correction, or additional cellular intimal proliferation, pulmonary arterial pressure tends to fall after operation and there is certainly no indication for progressive vascular disease. In contrast, all patients with either fibrinoid necrosis of arteries or with plexiform lesions died, if not shortly after operation then at a later time with signs of high pulmonary resistance. Two patients, previously reported by us[10] as doing well in spite of the presence of a single plexiform lesion in their lung biopsy, eventually appeared to have died 7 respectively 9 years after surgery. We therefore now discourage operation whenever there is evidence of fibrinoid necrosis or plexiform lesions in pre-operative biopsies, even when the general patency of the arteries would not prevent accommodation of a larger flow.

Thus it seems likely that the key for our decision lies with the onion-skin intimal fibrosis. In the absence of the more ominous vascular alteration, mild intimal fibrosis carries a fairly good prognosis. We have observed however, that if it is severe and extensive, the results are usually poor, if not immediately following operation then in a later period when progressive pulmonary hypertension develops. This is true whether there were plexiform lesions or not. The point of no return for plexogenic pulmonary arteriopathy, therefore, lies somewhere in between mild and severe intimal fibrosis of the concentric-laminar type.

Post-thrombotic, non-onion-skin-type fibrosis, as often observed in complete transposition of the great arteries, has an entirely different prognostic significance. The problem for the pathologist is what to advise when there is moderate or fairly severe onion-skin intimal fibrosis, particularly because the chances are that progression does not always set in at the same degree of vascular disease in various patients. This means that in these situations we can only give an ambiguous answer to the clinician who still has to decide upon operation on other grounds.

Primary pulmonary hypertension of the plexogenic type tends to be a progressive fatal disease. It must be realized that, where its cause is unexplained, we may assume that the unknown agent remains effective. In this respect the epidemic of primary pulmonary hypertension in Switzerland, West Germany and Austria from 1967-1970 is of interest. These cases have been attributed to the use of the anti-appetizer Aminorex fumarate. It is now becoming clear that if the use of Aminorex is stopped, in about half of the patients the disease will follow its relentless progressive course, while the other half may recover.[11] It is likely that this also depends on the stage to which the disease had progressed when the use of the drug was discontinued.

When we summarize the behavior of the various forms of hypertensive pulmonary vascular disease, we can state, though with some reservations and provided the cause of the hypertension being removed, that the lesions in hypoxic and pulmonary venous hypertension are reversible and those in pulmonary veno-occlusive disease probably not although they are unlikely to progress. There may be some regression in embolic pulmonary vascular lesions but only partially, and in advanced cases this may be very little. In plexogenic pulmonary arteriopathy regression is possible in the earlier stages. In the later ones there is, however, often not only no regression but even progression of vascular disease.

I am well aware that many questions will have been unanswered. I therefore would like to conclude with the final words that Jesse Edwards used for his classic paper that I mentioned before:

"There is much still to be done."

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Letters to the Editor

Dear Editor:

Complacency has set into American medicine. Quality of care for our patients and our financial futures are at stake. Our representative organizations such as the American Medical Association have lobbied long and hard to prevent erosions. None the less, changes are happening rapidly and unless we act soon, as individuals and as groups, it may be too late.

Recently, the Deficit Reduction Act (public Law 98-369) became law. Details of this law as it pertains to Medicare reimbursement for physicians' services have been widely published. In brief, the law establishes two classes of physicians. ''Participating'' physicians are those who agree to accept Medicare assignment plus deductible and co-insurance as payment in full. The agreement runs from October 1, 1984, through September 30, 1985, and will be renewable on a yearly basis. The names of participating physicians will be readily available to Medicare patients through a variety of sources including toll-free phone numbers. Participating physicians will be eligible for electronic billing and will, therefore, receive claim payments more rapidly than nonparticipating physicians who submit an occasional assignment claim. Participating physicians will also be allowed to ''increase'' fees charged to Medicare patients during the period from July 1, 1984 through September 30, 1985. However, these fee changes will not be recognized until October 1, 1985, when customary charge updates are made. Physicians who choose not to accept assignment on all patients will not be allowed to raise their charge to Medicare patients during the above 15-month period. To do so may result in serious penalties including fines of up to $2,000 per violation and exclusion from Medicare for up to 5 years.

As pointed out by Traveler's Company and Medicare itself, Medicare reimbursement is based on the lesser of physician's customary charges, physician's actual charges, or the prevailing charge for the service in the area. Therefore, if a majority of physicians chose not to participate, the prevailing charge among all physicians for a given service will not increase and reimbursement to participating physicians will not increase in spite of the fact that they were *allowed* to ''raise their fees.'' Therefore, a participating doctor could ''raise his fees'' without ever receiving an increase in reimbursement. In fact, if most physicians choose not to participate, reimbursement could remain at the present level almost indefinitely based on the ''prevailing charge'' method of reimbursement. If most physicians participate, reimbursement levels should theoretically rise, although it is my belief that Medicare would like to freeze reimbursement at the present levels indefinitely and, if most physicians ''participated,'' increase in reimbursement would be very small. Therefore, it appears to me that the Government's aim is to phase out all nonparticipating providers by dangling the carrot of increased reimbursement for ''participation'' but then leave physicians at a considerably lower level of income once near full participation has been achieved. We cannot allow this to happen.

For many years, the majority of us have sought to deliver high quality medical care to all of our patients regardless of their ability to pay. Those with financial difficulties have frequently been given discounts on their bills and for many of them, Medicare assignment has been accepted. We have done this because we felt it was the just and humane thing to do, even though we recognize that in some cases such a practice actually costs us money. This is true because Medicare reimbursement may not even equal our overhead expenses. We have done this of our own volition, not out of government coercion. Hospital and non-hospital based clinics and local government hospitals have existed for years in many cities to provide quality care to those who could not afford fee for service medicine. The fact remains that a large number of Medicare patients can well afford to pay a fair fee for our services. However, if the trend of the law continues, it will not be long before medical care is provided at minimal or no cost to all Medicare eligible patients. The next obvious step in this scheme is to expand such a program to all age groups.

Other changes have already begun. We may no longer mark up the charge on any lab tests sent to a lab outside of our office on any Medicare patient. This is regardless of participating or nonparticipating status. Only a $3.00 handling fee is allowed. As we all know, there is considerable expense in collecting laboratory specimens and much time involved in interpreting them, discussing them with the patient, and making decisions based upon them. DRGs are now fully in place in hospitals and we as physicians are next on the agenda. DRGs attempt to equate the care of human lives and all of the unpredictable events and complications involved in such care with the generally smooth function of an industrial production line. They, of course, are touted as cost saving measures by encouraging physicians and hospitals to minimize the cost of care, because the payment for such care is fixed. Of course, the supporters of such measures continue to fly the banner of "quality care." The potential dangers to the patient in such a program are obvious in spite of the best intentions of the physician.

It has long been recognized that inequalities in earnings exist among the various physician specialties with procedures being far better rewarded than cognitive services. In fact, one of the ironies of the government cost-cutting measures is that those presently earning the least may be hurt the most. However, I firmly believe that *all* physicians are, and will continue to be, significantly affected and must, therefore, become involved.

Those of you in health maintenance organizations must recognize that you are not immune to these changes and that you too must fight to preserve your independence.

Whether or not you choose to become a participating provider must be your individual decision. It is important that you be well informed on the pros and cons before you make your choice. I urge you to consider the negative implications of being a participating provider. If you are concerned about the new laws, write to your senators and congressmen expressing your concerns and urging appropriate changes. Active steps such as this may be quite helpful; inaction will only allow things to become progressively worse. Act now, there is little time left!

Lawrence N. Mulmed, M.D.
Minneapolis, Minnesota

Editor's Note: Sign-up season is over, but the Editors feel this letter is still applicable.

Cover Slides for Minnesota Medicine

We are looking for winter and spring scenes for covers for MINNESOTA MEDICINE. Please send your vertical 35 mm slides to me at the Southdale Medical Center, Suite 225, Edina, MN 55435.

Bruce Nydahl, M.D.
Cover Editor

Dear Editors:

Since the advent of man, there have been unfortunates who have become paralyzed on one or the other half of their body, committing them to a life of disability, unable to sit erect or keep from sliding forward in their chairs.

The nursing profession has been customarily delegated to struggle with these patients, many of them heavy, attempting to pull them up into upright sitting positions. Various forms of restraints are used to hold these patients in position.

Now we have an appliance that fits any wheelchair or any pedestal and keeps the patient from sliding off forward, and prevents many back injuries to the nurses. It is shaped like a ''saddle'' and conforms to the contour of the buttocks, regardless of size. It is very comfortable and the patients no longer ''slide off.''

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S. T. Kucera, M.D.
Northfield, Minnesota

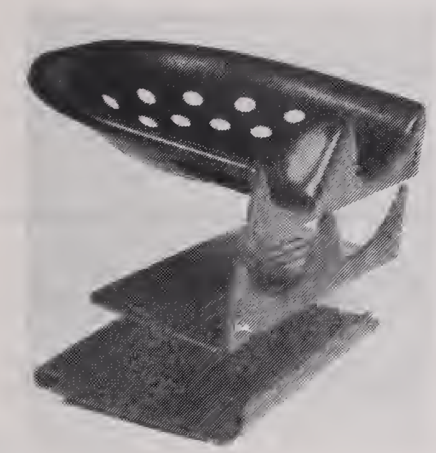

Fig. 1 — Saddle appliance will fit any wheelchair.

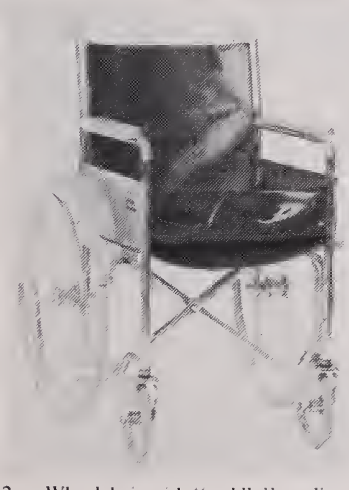

Fig. 2 — Wheelchair with ''saddle'' appliance in place.

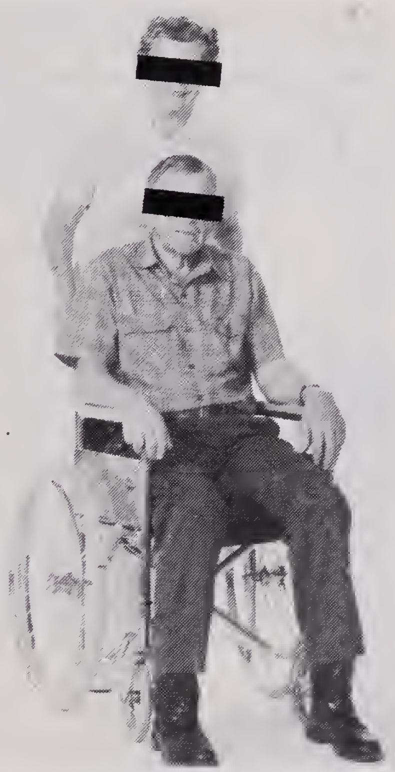

Fig. 3 — Wheelchair with patient sitting astride saddle appliance.

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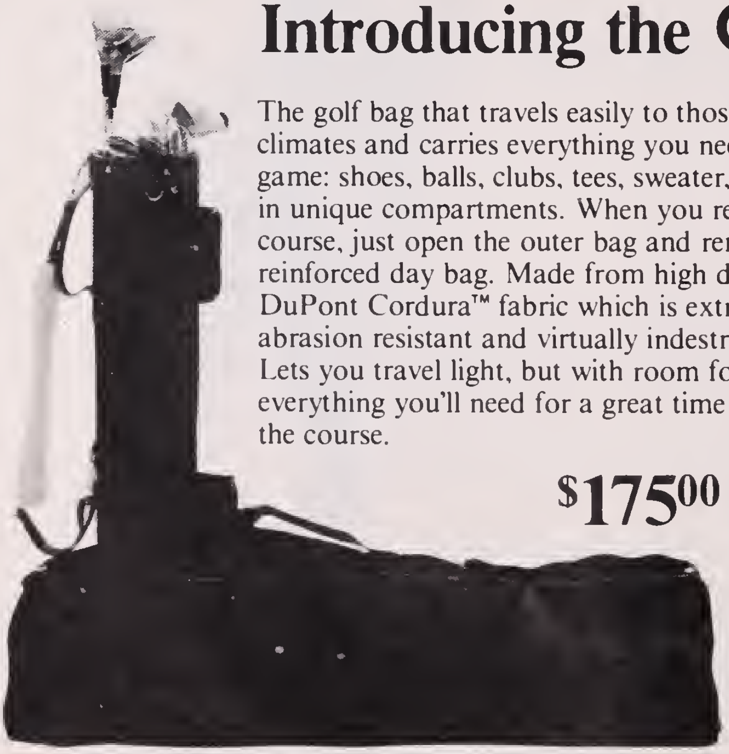

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Smoke-free Hospitals

Attitudes of Patients, Employees, and Faculty

THOMAS E. KOTTKE, M.D.,* CYNTHIA HILL, R.D.,† CHARLES HEITZIG,* MILO BREKKE, Ph.D.,*
SUSAN BLAKE, Ph.D.,‡ SHERYL ARNESON, M.S., M.A.S.,* and CARL CASPERSEN, Ph.D.‡‡

A random sample of patients, physicians and employees of the University of Minnesota Hospitals was surveyed to identify issues and attitudes about eliminating all smoking in a hospital. Almost 90% of patients support establishing a smoke-free hospital, a proportion far underestimated by employees and medical faculty.

FIFTY-SIX YEARS ago, the *New England Journal of Medicine* reported the association between smoking and lung cancer.[1] Twenty years ago, the first Surgeon General's Report on Smoking and Health reported the link between cigarette smoking and cancer, heart disease, and other disabling conditions.[2] Smoking more than doubles the risk of heart attack in men.[3] It also worsens the prognosis for patients with heart disease, diabetes, pulmonary disease, renal disease, and vascular disease.[4-8] Smoking is the single largest cause of disease, death, and disability in Minnesota.[9]

In response to the disease burden from smoking, the American Heart Association, the Minnesota Medical Association, and the American Lung Association of Minnesota all call for the elimination of smoking areas within health care facilities. The American Medical Association has called for a smoke-free society for the year 2000. The Minnesota Department of Health has released a proposal for affirmative action to reduce the burden of smoking in Minnesota (to be published later). However, the elimination of smoking in hospitals will be resisted by some patients, hospital employees, and medical faculty. The authors, therefore, investigated the opinions of these groups to identify the basis and extent of any opposition.

Methods

The study sample consisted of 100 patients randomly selected from a pool of all patients discharged between July 1 and December 31, 1983 from the University of Minnesota Hospitals, 100 employees randomly selected from hospital payroll records, and 100 faculty randomly selected from the faculty list of the medical school. The subjects were interviewed over the telephone by trained interviewers. The mother was interviewed when a patient was under 18 years of age. Fourteen percent of the patient sample did not participate: Four due to illness or death, two refused to participate, and eight could not be located even after extensive inquiry. One percent of the employee sample, and 1% of the faculty sample did not participate.

When contacted by telephone, the interviewer introduced himself/herself and read the following paragraph:

> Certain patients who smoke tend to recover more slowly and may die sooner than patients who stop smoking. This is especially true for patients with heart disease, diabetes, kidney failure, stomach ulcer, hardening of the arteries, or certain types of cancer. Many patients sincerely want to stop smoking. A clear message from doctors and hospital staff about the harmful effects of smoking helps patients to quit smoking. It has been suggested that smoking be prohibited everywhere in the hospital as part of this message. A smoke-free hospital is one where smoking is absolutely prohibited in all areas of the hospital (no designated areas), and I will be referring to a smoke-free hospital during this survey.

Participants were asked to respond to a structured survey. Patients were asked to answer for themselves, that is, how they felt about an issue rather than how they thought most patients would feel about an issue.

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Address reprint requests to: Thomas E. Kottke, M.D., Cardiovascular Division, Box 508 Mayo, 420 Delaware St SE, Minneapolis, MN 55455.

When answering questions about patient attitudes, employees and faculty were asked to respond in terms of how they felt most patients would respond. When answering questions about employee and faculty attitudes, they were asked to provide answers that reflected their own opinions regardless of how they thought the majority of employees or faculty felt. Reinterview of a 15% sample documented interview accuracy.

All responses are reported as percentages. With a sample size of 100, the 95% confidence interval around 50% is ±10%, the 95% confidence interval around 25% is ±8.5%, and the 95% confidence interval around 5% is ±5%.

Results

When compared to the employees and faculty, the patients were most likely to be current smokers and slightly less likely to be ex-smokers or never smokers (Table 1). All the employees and faculty (100%), and most patients (88%) believed active smoking to be a health hazard. Approximately an equal proportion of patients (88%), employees (85%), and faculty (93%) believed passive smoking to be a health hazard.

About one-third of the patients, employees, and faculty agreed that smoking areas in the hospital give the message that smoking is not a health hazard (Table 2). One-third of the patients, and half of the employees and faculty agreed that smoking areas demonstrate the hospital's approval of smoking.

TABLE 1

Smoking Status of Patients and Employees

	Patients	Employees	Faculty
Current Smokers	23%	16%	10%
Ex Smokers	32%	39%	37%
Never Smoked	46%	45%	53%

TABLE 2

Hospital Smoking Area as a Negative Health Message

	Patients	Employees	Faculty
When smoking is permitted in hospital it leads me to believe that smoking is not dangerous	29%	37%	39%
When smoking is permitted in the hospital it leads me to believe that the hospital approves of smoking	38%	47%	58%

About half of the patients, employees, and faculty agreed that a smoke-free hospital violates patient rights (Table 3). However, while fewer than 20% of the patients said they would get angry if they couldn't smoke, almost all the employees and faculty thought that patients would get angry. More than three-quarters of the patients, employees, and faculty agreed that a smoke-free hospital would be an improvement in patient care and should be instituted to demonstrate the health hazards of smoking.

TABLE 3

Smoking as a Patient Right versus Smoke-free Hospitals as a Health Message

	Patients	Employees	Faculty
A smoke-free hospital would violate rights	41%	55%	46%
A patient would become angry if not allowed to smoke	17%	82%	82%
A smoke-free hospital would be an improvement in patient care	83%	68%	82%
A smoke-free hospital is a good way to emphasize the health hazards of smoking	88%	72%	82%

The employees and faculty favorably viewed the smoke-free hospital as a place to work (Table 4). More than 40% of the patients said that a smoke free hospital would raise the status of the hospital in their eyes, and another 50% said it would not change their opinion about the hospital. While about 10% of the patients and faculty, and 20% of the employees viewed a smoke-free hospital negatively, fewer than one in twenty patients, employees, or faculty reported they would seek work or care elsewhere if not permitted to smoke in the hospital. Almost half of the employees and faculty felt that patients would seek treatment elsewhere if not permitted to smoke.

TABLE 4

Attitudes Towards a Smoke-free Hospital

	Patients	Employees	Faculty
Positive	40%	80%	89%
Neutral	52%	0%	2%
Negative	8%	17%	9%

Almost all faculty (91%), employees (88%), and patients (85%) agreed that hospital personnel should not be able to smoke if patients were not able to smoke. When asked whether they would quit smoking if they received a quit message from their physician, 59% of the smoking patients, 87% of the smoking employees, and 90% of the smoking faculty reported they would probably or definitely stop smoking. Three-quarters of the patients favored a smoke-free hospital or smoking only with the prescription of a doctor (Table 5). Somewhat fewer employees and faculty favored these restrictions.

TABLE 5
Favored Smoking Restrictions

	Patients	Employees	Faculty
Smoke-free hospital	54%	31%	40%
Smoking only with physician approval	20%	22%	23%
Current Minnesota Law*	27%	46%	37%

*Smoking only in designated area

Discussion

This study demonstrates that smoking areas in hospitals deliver a conflicting message about the health hazards of smoking. Many feel that elimination of smoking areas would violate patient rights, but that these rights should be abrogated in the interest of health. Many also felt that the status of the hospital would be raised in the eyes of the majority of patients, employees, and faculty; and, a smoke-free hospital may help patients, employees, and faculty to stop smoking. A small minority of patients, employees, and faculty said that they would leave the hospital if not permitted to smoke.

Smoking in the hospital weakens the anti-smoking message. Others report that when employees and faculty are observed smoking, their smoking behavior is imitated by patients.[10] Even after 20 years of warnings by the Office of the Surgeon General, 10% of our patients did not agree with the statement that smoking is a health hazard.

Probably the most controversial issue concerning the smoke-free hospital is that of smoker's rights. Fifteen years after Lister proposed anti-sepsis and twenty years after Semmelweis proposed handwashing, physicians no longer took seriously a once-claimed right to perform surgery without sterile precautions or a once-claimed right to deliver a baby in the same clothes used to perform an autopsy.[11] More than half a century after the danger of cigarette smoking was first demonstrated, physicians are still debating whether or not to take action. It could not be more clear that all smoking, regardless of the setting, is a threat to life and an anti-thesis of health care. Smoking in public is not a right.

Most patients, employees and faculty would view the smoke-free hospital as an improvement in medical care. Adopting a smoke-free status would also raise the status of the institution in the eyes of the community. In the days of competition, this may be an effective marketing device for health care institutions. With prospective reimbursement, the hospital also stands to loose significant amounts of money on the patient whose stay is lengthened because of smoking. The elimination of smoking is the only cost-containment proposal that would both cut costs and improve health at the same time.

Most physicians and health care providers agree that health professionals should persuade people to stop smoking. Of the 54 million Americans that still smoke, 75% want to quit.[12] Many patients report they never receive a quit message from their physicians. Smoke-free hospitals could play a major role in effecting change in smoking habits.

A small minority of patients, employees, and faculty say that they would leave the institution if they could not smoke. This exodus may or may not take place. The smoke-free hospital concept is being applied now at the Matogorda County Hospital in Bay City, Texas, without any problems. Two psychiatric hospitals, one in Illinois, and one in Connecticut[13], are smoke-free and continue to be successful. The New England Deaconess Hospital in Boston, Massachusetts, is presently moving toward a smoke-free hospital, as is the Park Nicollet Medical Center in St. Louis Park, Minnesota. Each of these hospitals has a common characteristic — top level medical and administrative management committed to quality health care rather than profits.

At least 75% of the patients agreed that a smoke-free hospital would be an improvement in medical care and should be instituted. Even the United States' Constitution can be changed with a two-thirds majority vote. Smoke-free hospitals are medically indicated. Given the known health hazards of smoking and the documented support for change in administrative policy, we must now strongly reconsider why we give our patients conflicting messages about the hazards of smoking in order to protect the 'right' of a very small minority to perform this harmful and costly act in a health care setting.

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6-13. Will be found on page 22.

Message to:

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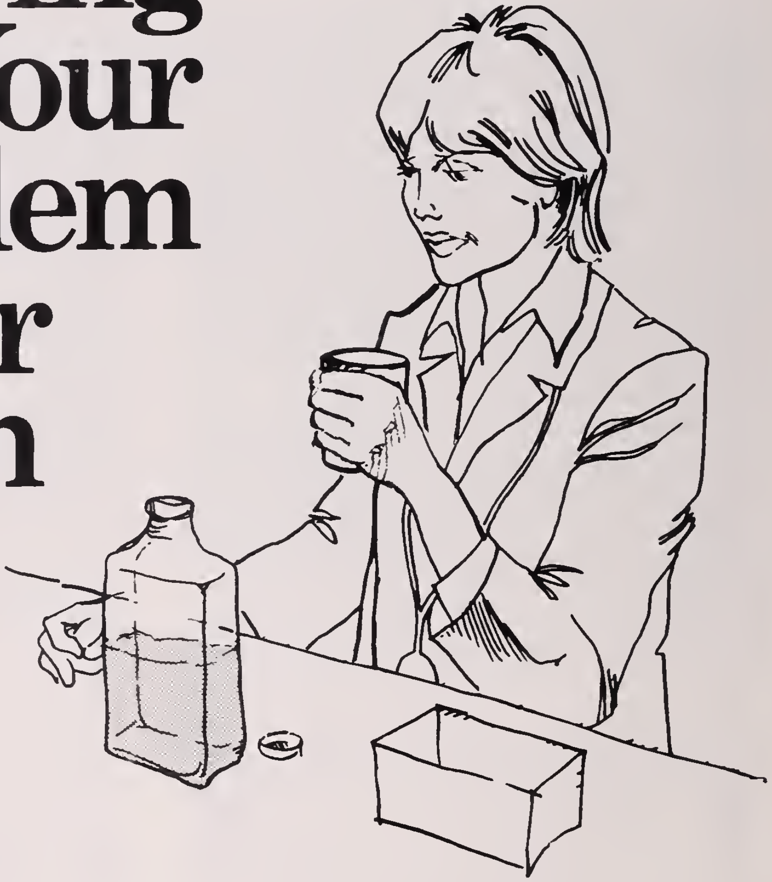

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Twin Cities Consumers' Attitudes on Health Care*

CAROL J. KAEMMERER†

WHAT DO TWIN CITIES consumers think about the health care system, health care costs, and their own health plan? A study just released by the Minnesota Coalition on Health Care Costs and the Center for Health Services Research of the University of Minnesota sheds some light on these questions.

The large-scale survey of employees in 20 Twin Cities firms was jointly financed by the participating companies, the CIGNA Corporation and the two organizations conducting the research. Since the firms included in the research were not randomly selected, the findings are generalizable only to the set of participating companies. This group does, however, represent 15% of the work force in the Metropolitan area and 10% of the work force in the state. Firms participating ranged in size from 60 to 22,000 employees located in the state.

Some highlights of the study which are of particular relevance to Minnesota physicians are presented here.

Findings

Attitudes Toward Health Care Costs

- While 86% of the respondents are aware that health care costs are rising more rapidly than general inflation, less than half accurately recognized it as the primary cause of the increase.
- Nearly half hold hospitals most responsible for the increases in health care costs, 22% view physicians in that role, and 12% held insurance companies as the most responsible.
- Fifty-eight percent of the respondents felt that hospitals encourage over-utilization to increase revenue; thirty-seven percent felt doctors acted in this way.
- Nearly two-thirds felt that the willingness of insurance and governmental programs to pay the bills provides no incentives for hospitals and physicians to contain costs; and over half felt that patients with comprehensive insurance do not care about health care costs.
- While respondents generally agreed that new technology and regulations have added to the costs of health care, less than half attributed cost increases to higher quality of care or changes in population trends.

Attitudes Toward the Health Care System

- Although price variances among Twin Cities hospitals have been widely publicized, 42% of those responding were unaware of those differences.
- Nearly half (49%) felt that major price differences for similar services exist among Twin Cities physicians despite the fact that these differences have not been well documented or publicized.
- Eighty-six percent felt people would use less medical care if they had to pay more out of their own pockets, and over three-fourths (77%) thought this would have harmful health consequences.
- Nearly half (46%) were unaware that doctors' skills and proficiencies are reviewed periodically prior to renewal of their licenses.

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†Director of Research, Minnesota Medical Association, Minneapolis, Minnesota.

*This article is based on research conducted by the Minnesota Coalition on Health Care Costs and the Center for Health Services Research at the University of Minnesota: Summary Report — 1984 Employee Survey, September 1984 Authors: Bryan E. Dowd, Ph.D., Roger Feldman, Ph.D., Steven Cassou, and Jennifer Hunt.

- Respondents seemed to be aware of and accept differences in practice styles. Eighty-eight percent agreed that "two doctors, equally good at their jobs, may suggest different ways of treating the same illness."
- Over half (55%) felt that physicians and hospitals have too much control over the health care system.
- Respondents enthusiastically supported preventive care and healthy life styles. While unsure about the cost effectiveness of employee health promotion programs, most felt that firms should get a tax break for offering such programs and over 80% felt that companies providing such programs should have lower rates for their health plans.

Changes In Health Plan Benefits

- Health care plan restrictions were generally acceptable to the respondents. Over 80% felt that in "medically appropriate situations" they would support: mandatory substitution of home and hospice care for extended hospital stays; outpatient surgery for inpatient surgery; generic for brand name drugs; requirements for same day admission and presurgical tests on an outpatient basis for routine surgical procedures. Further, over 80% would be willing to use these cost-saving measures on a voluntary basis if they were optional rather than mandatory for their health care plan.
- The plan restriction which requires patients who use high priced hospitals and physicians to personally pay the difference between "normal prices and higher prices" was the least favored option. Fifty-five percent would support it as a mandatory provision of the plan.

Choice of Health Plan

- [The reader is again cautioned that these demographic characteristics are generalized to the set of participating companies and *may* differ substantially from the experience of the general community.]
- Fifty-eight percent of all respondents were enrolled in Health Maintenance Organizations. (Thirty-seven percent were in "Prepaid Group Practices" (PGP) — MedCenters Health Plan, Coordinated Health Plan, Share, Group Health Plan. Twenty-one percent were in "Independent Practice Associations" (IPA) — Health Maintenance Organization of Minnesota and Physicians Health Plan.)
- Persons with indemnity coverage have the highest percentage of family plans (76% versus 66-67% for both types of HMO coverage).
- The following demographic characteristics for enrollees in different types of plans are statistically significant:
    - — Indemnity Plan enrollees had higher incomes than those with PGP or IPA plans.
    - — IPAs had the highest percentage of female enrollees (51%) followed by PGPs (43%) and Indemnity Plans (39%).
    - — PGP enrollees had the highest educational levels.
    - — Indemnity plans had the highest percentage of married enrollees and the highest number of dependent children per respondent.
    - — Indemnity Plan enrollees were approximately three years older on average than IPA enrollees who, in turn, were about three years older than PGP enrollees.
- There is general satisfaction of the respondents with their health care plans. Over 90% noted that they were "satisfied" or "very satisfied" with the quality, convenience, and paper work associated with their health plan.
- However, differences among types of plans were statistically significant, with satisfaction levels greatest for Independent Practice Associations followed by Indemnity Plans and Prepaid Group Plans on the following characteristics: quality of care, convenience of doctors, convenience of hospitals.
- With regard to convenience of paper work, Independent Practice Associations were

perceived as most convenient followed by Prepaid Group Plans and Indemnity Plans.

- The following findings regarding waiting times are statistically significant:
  - — Waiting times for a routine or preventive care appointment in days:
    - Indemnity — 5 days
    - IPAs — 5.5 days
    - Prepaid Group Plans — 9 days.
  - — Waiting times to see the doctor after arriving in the office:
    - Prepaid Group Plans — 20 minutes
    - IPAs — 22 minutes
    - Indemnity Plans — 26 minutes.
- There was no statistical difference among types of plans regarding waiting time in days for an "illness appointment".
- The characteristic most important to respondents in choosing a plan was the high quality of medical care provided by the doctors and hospitals affiliated with the plan. Cost was also relatively important with monthly premium cost and "point-of-purchase costs" for hospital care rating slightly higher than "point-of-purchase costs" for office care. While difficulty in getting an appointment to see the doctor was considered to be fairly important, waiting time in the office and the amount of paper work required by the plan were relatively less important.
- Statistically significant differences in the importance of plan characteristics among enrollees in the three types of plans were noted:
  - — Low monthly premium cost. (More important to PGP and IPA than to Indemnity enrollees.)
  - — The ability to choose my own doctor. (More important to Indemnity enrollees than to PGP enrollees.)
  - — Ability to choose any hospital. (Same as above.)
  - — Low cost or free office care. (PGP and IPA enrollees value this more highly than do Indemnity Plan enrollees.)
  - — Low cost or free hospital care. (Same as above.)
  - — Little paper work and few claims forms. (Valued most highly by IPA enrollees and least by Indemnity enrollees.)
- High quality care is uniformly very important across all plan types,
- Differences in health status by type of plan is statistically significant: 24% of Indemnity enrollees, 22% of IPA enrollees, and 17% of PGP enrollees had "long-standing medical conditions."
- There were no statistically significant differences in the number of physician contacts nor the number of hospital admissions by plan.

What Employees Would Do To Contain Health Care Costs

Employees were asked how they would contain health care costs were they in the position of the employer. The following strategies are listed in order of preference:

Strategy	Percentage
Give employees better information on physician and hospital charges.	93
Offer a health promotion/disease prevention education program to employees.	88
Negotiate with physicians and hospitals to obtain lower prices.	80
Encourage employees to enroll in HMOs.	72
Offering cash incentives to employees whose health care costs are below a certain level.	64
Ask employees to share future increases in the cost of health care.	57

Implications for Physicians and the MMA

While it is clear that consumers are aware that health care costs are rising more rapidly than inflation, they are unaware that inflation is the most significant factor in the increase. Hospitals, physicians, and third-party payors (in that order) were viewed as the groups most responsible for rising health care costs, and a sizable percentage felt that hospitals (58%) and doctors (37%) encourage unnecessary utilization. While consumers were not characterized by respondents as a group responsible for rising costs, there was a general recognition that patients with comprehensive insurance are not sensitive to cost/utilization issues.

Although there is little comparative data regarding physician fees, nearly half of those responding perceive a wide variation in physician fees. Coupled with two of the top three suggested reforms ("give employees better information on physician and hospital charges" and "negotiate with physicians and hospitals to obtain lower prices"), the pressure for more information regarding physician fees becomes more evident.

Respondents overwhelmingly (90% +) felt that they received quality care through their health care plans. High quality of health care was also the most important consideration for employees in their evaluation of their health care plan options. Cost considerations emerged as the next most important factor, with monthly premium costs and "point-of-purchase costs" for hospital care slightly more important than "point-of-purchase costs" for office care.

Consumers seemed more willing to adjust the way in which they use the health care system (acceptance of health plan restrictions) than to personally pay more for their health care. Nearly 90% recognized that differences in practice style do not necessarily affect quality. While there was general agreement that people would use fewer health care resources if they had to pay more personally, over three-fourths thought that this would have harmful health consequences. The Preferred Provider Organization approach (consumers would personally pay more if high cost providers were utilized) was viewed as acceptable by just over half of the respondents but was less favored than any of the other types of restrictions currently in place in most Health Maintenance Organizations. Increased cost sharing by employees was the least preferred strategy for health care reform.

The study offers many insights into the perceptions and behavior of health care consumers. Physicians who are contemplating whether to affiliate with various types of health care plans may find information against which to evaluate their own options. The following *employee assumptions* about the health care system and its problems *inferred* from the study are offered here as a summary:

- "We are concerned about the rising costs of health care and we view providers as responsible."
- "We want more information from physicians and hospitals about their charges."
- "We currently receive high quality care and we view quality as the most important component of any health care plan."
- "We are willing to change the way in which we use the health care system to save money."
- "We are unwilling to pay more out of our own pockets for our health care."

Both individual physicians and the Minnesota Medical Association will want to approach their discussions with patients and the public with these assumptions clearly in mind.

1985 MMA Annual Meeting to be Held at the St. Paul Radisson

The Board approved a site change for the MMA Annual Meeting to be held May 8-10, 1985. MMA will meet at the St. Paul Radisson instead of the Radisson South in Bloomington.

As the Competitive Market Unfolds: Physician Attitudes and Actions Toward Fee Disclosure and Price Information*

CAROL J. KAEMMERER† and MARY ELLEN WELLS‡

A survey of Minnesota physicians in February 1984 examined their attitudes and behavior toward fee disclosure and their use of price information in physician referral and hospital admission decisions. Ninety-four percent of the respondents agree with the concept of fee disclosure, yet their actions do not necessarily reflect this positive attitude. Most respondents do not consider price information in their referring or admitting decisions although approximately half feel it is important. Consistent with past research findings and the physician's primary responsibility to the patient, quality factors were the most important considerations in these decisions. Significant relationships were found between fee disclosure behavior and attitude, age, and type of practice. Physician use of price information was found to be highly related to attitude, age, and size of practice.

CONCERN OVER THE RISING costs of health care, an issue of major proportions in the 1980s, has led to a proliferation of strategies for containing those costs and more recently to plans for the restructuring of incentives in the health care system. Capitation, prepaid and other alternative financing mechanisms (including Health Maintenance Organizations and Preferred Provider Organizations) are among the private sector responses to rising costs. In October, 1983, the federal government began to phase-in a system for Medicare (Prospective Payment System under Diagnosis Related Groups) which is essentially patterned after a capitated incentive structure. With this move, the federal government signaled that the rules of the health care game would be forever changed, with costs becoming an integral factor to be evaluated by the clinician. In Minnesota, with the repeal of Certificate of Need legislation in 1984, the legislature has urged the voluntary disclosure of price information by all health care providers. The use of price information by both physicians and consumers of health care will be explored in this review of the literature.

Physician as User of Price Information

With regard to the use of price information by physicians in their clinical decision-making, the literature is mixed. In a study of factors that influence referral decisions by general surgeons and general practitioners, Ludke found that treatment and care-related items were most important and considered first, followed by personal knowledge of the referral physician. Cost to the patient was ranked low by both groups. In a similar study of hospital characteristics as criteria in admitting decisions, Ambrose and Purdum found nursing care, medical facilities, and hospital reputation were of primary importance to physicians, while economic conditions were not considered.[1] Zelnio and Gagnon reviewed the literature to predict the impact that cost information might have on physicians' prescribing behavior. They concluded "physicians will not incorporate price information into their prescribing decision to the extent necessary to achieve a cost savings."[2] More recently, John Hoey and his colleagues concluded that tests which are marginal in diagnostic value may not be ordered by physicians because of their costs. They noted, however, that tests which were more clinically essential were not effected by price, since quality becomes the overriding determiner.[3] Cummings, et al, found "providing physicians with information about the prices of diagnostic tests can significantly alter their test-ordering behavior in the direction of ordering fewer tests."[4]

In a report on ethics in a competitive environment approved by the House of Delegates of the Minnesota Medical Association, the physician's primary responsibility to the patient was emphasized. Recognizing the pre-eminence of the patient's needs in the clinical decision-making process, the report noted that "physicians who choose a less costly treatment regimen for their patients without *primary consideration for the patient's needs* are not acting in the best interest of the patient.'' (Emphasis added.) The report went on to say that less costly treatment approaches which are consistent with patient needs should be pursued.[5]

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*This article is the result of research performed by Mary Ellen Wells (as a Masters thesis for the program in hospital and health care administration at the University of Minnesota) and Carol J. Kaemmerer, Director of Research of the Minnesota Medical Association in cooperation with the MMA.

†Director of Research, Minnesota Medical Association.

‡Administrative Fellow, University of Minnesota Hospitals and Clinics.

While the findings of some studies may have been out-dated by the rapid changes in incentive structures of health care payment mechanisms and changes in public policies and attitudes, there may always be a threshold beyond which a physician will not cross in the consideration of cost as a factor in decision-making. This is probably as it should be, since the physician's primary responsibility is to meet the needs of the patient.

Consumer as a User of Price Information

Until recently, consumers have had little interest in price information, due in large part to their insulation from the costs of health care by third party payment plans. This is changing, however, with the growing trend for consumers to become actively involved in health care decisions and the increasing financial stake which they have through their monthly health care plan payments, deductibles, and co-payments. The awareness of consumers regarding health care cost issues was explored in a study released in September, 1984 of the employees of 20 Twin Cities firms. Some of the findings of that study (which can be generalized only to the set of companies which actually participated) are noted here. Over half of the respondents felt that patients with comprehensive insurance do not care about health care costs. With regard to the interaction between costs and quality, 86% of the respondents felt that people would use less medical care if they had to pay more out of their own pockets, and 77% thought that a person's health would be harmed if required to pay more out-of-pocket for medical care. While various health care plan restrictions were generally acceptable to respondents, mandatory use of lower cost physicians received less support than other types of restrictions. When employees were asked how they would contain health care costs if they were in the position of the employer, 93% chose the strategy ''give employees better information on physician and hospital charges.'' The offering of health promotion/disease prevention education programs was the strategy chosen by 88%, and negotiations with physicians and hospitals to obtain lower prices was cited by 80%. Asking the employees to share future increases in the costs of health care was ranked as the least desirable alternative (57%).[6]

It is against the background of rapidly changing incentives and intensifying interest in health care cost containment by payors, providers, and consumers, that the practices of Minnesota physicians regarding fee disclosure were studied.

Methodology

A self-administered questionnaire accompanied by a cover letter from the President and Chairman of the Board of the Minnesota Medical Association was mailed to a random sample of 500 MMA members. After two mailings, 371 physicians returned the surveys, for a response rate of 72%. Frequency distributions and Chi-Square analyses are reported.

Specifically, the study examined:

- The physician's use of and attitude toward fee disclosure.
- The use and importance of price as a decision factor in referrals to other physicians and admissions to hospitals.
- The relationship between physician fee disclosure practice, use of price information and personal attributes.

Results

Fee Disclosure

Ninety-four percent of the respondents felt patients should have price information about the health care

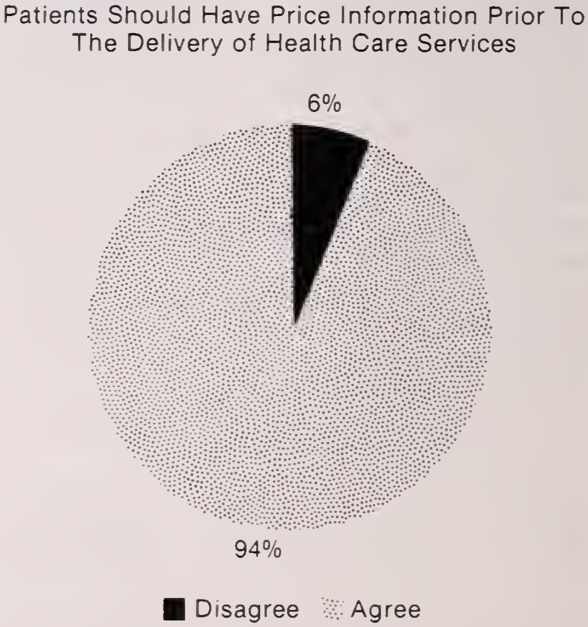

Figure 1

services they will receive *prior* to the delivery of those services (Figure 1). Beliefs and actions, however, are not always consistent. Fourteen percent of the respondents indicated that they *always* communicate price information to their patients and an additional 78% sometimes do (Figure 2). Over one-third (35%) of the respondents had increased their discussions with patients regarding price during the last year. Many who had not increased their discussions in the past year noted that they were already discussing their fees with their patients.

Many methods are used to communicate fee information with patients, (Figure 3). The most common methods were: the availability of a fee list; physician discussing fees with patients directly; a sign indicating that fees are available on request; and office staff discussing fees with the patient before the patient sees the physician. The least common method of communicating fees was the posting of fees in the office area.

Use of Price Information

The relevance of price information to the physicians' referral and hospital admission decisions was explored. The findings in this area are generally consistent with those of the studies cited above. For those respondents who make physician referrals, almost

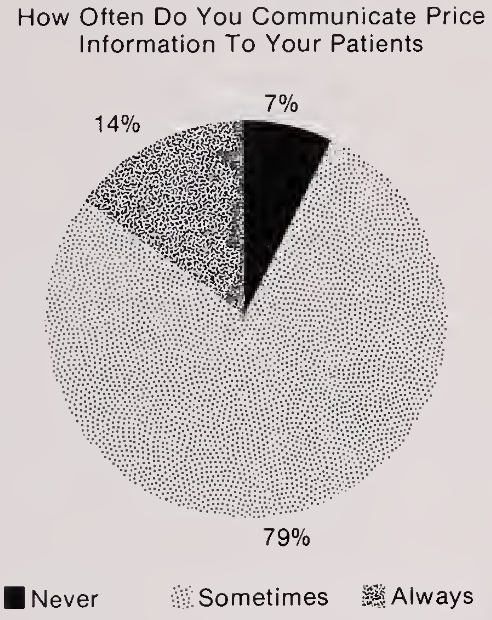

Figure 2

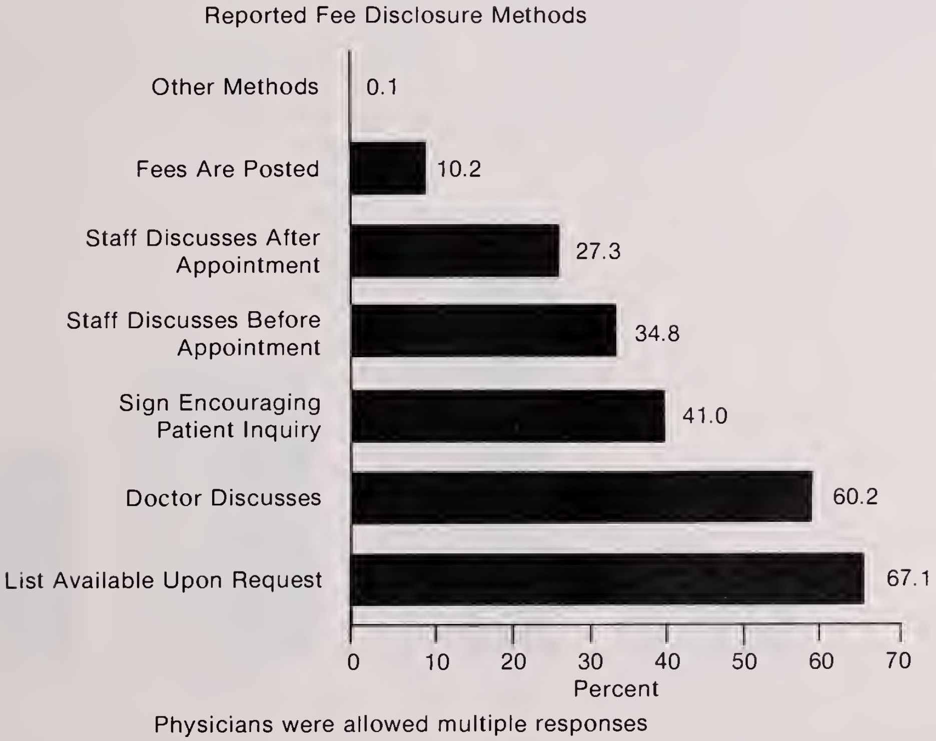

Figure 3

half indicate that price is either a somewhat or very important consideration in their selection decision. (See Figure 4.) Yet, in ranking the top three criteria which physicians consider in the referral decision, no one ranked price as their first consideration, less than 1% ranked it second, and 5% ranked it third. The three most frequently cited criteria were more related to quality issues: clinical expertise (58%); previous experience with that physician (36%); and convenience to the patient (26%). Of those respondents who admit patients to hospitals, 13% considered price to be "very important" in selecting the hospital and 38% felt that it was a "somewhat important" factor (Figure 4). Ninety percent of the respondents did not rank price as one of the top three considerations for the admission decision. As with referrals to physicians, quality aspects take precedence over price considerations in hospital selection. Availability within the hospital of the service needed by the patient and quality were the factors rated as the most important consideration by 36% and 31% of the respondents, respectively. Those same two factors were the most frequently chosen as secondary considerations (25% and 20% respectively). The most frequently cited third factor which influences the hospital admission decision was convenience to the patient (25%).

Correlations

Chi-Square analysis revealed significant relationships between physician fee disclosure and attitude, age, specialty, and group practice size (Table 1).

TABLE 1
Relationship Between Fee Disclosure Behavior and Personal Attributes Chi-Square Analysis Summary

Attribute	Significance
Agreement	.019*
Age	.011*
Gender	.213
Specialty	.006*
Type of Practice	
Solo v Group	.121
Solo v Multi-Spec	.160
Size of Practice	.042*
% Prepd. Patients	.061
Location	.871

*Significant at or below the .05 level.

Although a positive attitude toward price information for health care consumers was not found to automatically predict the practice of fee disclosure, disagreement with the concept was highly correlated with nondisclosure behavior. Older physicians were more likely to discuss fee information with their patients than were younger physicians. Pediatrics was the only specialty to have more "non-disclosers" than "disclosers". Physicians practicing in small groups are more likely to disclose their fees than are those who practice in large groups. No significant correlations between fee disclosure and gender, type of practice, percent of prepaid business, or location were found.

Further Chi-Square testing identified four factors which relate to the use of price information in referral

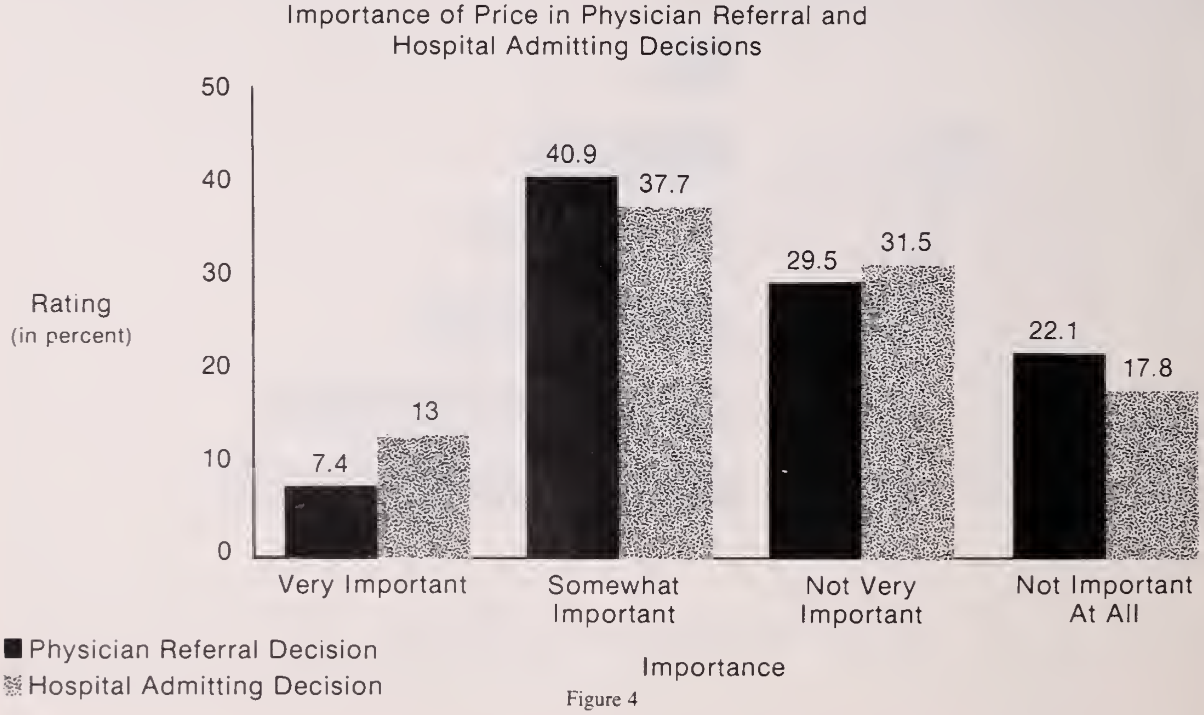

Figure 4

and admission decisions (Table 2). Greater proportions of physicians who feel price is important rather than not important are older, in solo practice rather than group arrangements, or who are in multispecialty groups rather than single specialty groups, report that a physician's fees or a hospital's prices are significant considerations. However, of these groups, only older physicians had a majority who rank price information as one of their top three decision criteria. No significant relationships exist between the use of price information and gender, percent of prepaid business, specialty, group practice size, or location.

TABLE 2
Relationship Between Use of Price Information and Personal Attributes
Chi-Square Analysis Summary

Attribute	Significance
Attitude	.001*
Age	.035*
Gender	.191
Specialty	.526*
Type of Practice	
Solo v Group	.002*
Solo v Multi-Spec	.052*
Size of Practice	.117
% Prepd. Patients	.203
Location	.728

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*Significant at or below the .05 level.

Discussion

It is clear that physicians support the concept of price information available to patients prior to the delivery of services. However, actions in support of this belief are not always consistent. Fee information is communicated in a wide variety of ways, with fee lists and personal physician-to-patient discussions the most common methods. The incentives designed to increase cost-sensitivity of both providers and consumers do appear to be having an impact, since the communication efforts regarding price for over one-third of the respondents had increased during the past year. It is possible that physician actions are in a transition stage, and that they will be more congruent with their attitudes and with new incentives in the future than they are at present.

While those who watch only the "bottom line" regarding costs may view as disappointing the reluctance of physicians to use price as a principal factor in making such decisions as referrals and hospital admissions, patients and physicians alike will find this heartening. With the increasing pressures to save money, and the increasing number of programs that put physicians at financial risk for the care provided, the continued use of quality rather than cost considerations as the primary determinants in such clinical decision making demonstrates that physicians continue to act as advocates for patients.

The correlation between age and fee disclosure behavior — that is, that older physicians were more likely to disclose fee information than their younger colleagues — was a finding not predicted by the researchers. Older physicians were also the only group to have more "users" than "nonusers" of price information in relation to their referral and admission decision. Perhaps these findings can be understood from the high medical education debt of young physicians which may lead to higher fees and a greater reluctance to discuss those fees. Another possible explanation is that younger physicians are less secure in their relations with patients than are older physicians, and therefore more reluctant to discuss their fees.

The finding that pediatrics was the only specialty in which "non-disclosers" outnumbered "disclosers" was also not intuitive. Perhaps within the setting of parental and physician concern over the ill-health of a child the discussion of fees seems particularly inappropriate. It is interesting to note that the majority of other primary care physicians, psychiatrists, and surgical specialists disclose their fees.

The finding that physicians practicing in small groups were more likely than those in large groups to disclose price information is also somewhat surprising. This may stem either from the lack of a formal, complex organization which may impede change, or that in a smaller group there are fewer people to convince.

No significant correlation between physicians who have a 100% prepaid practice and the use of price information in their referral and admitting practices was found. One might conclude that despite the emphasis of HMOs on containing health care costs, physicians with a 100% prepaid practice are no more likely than physicians in other settings to consider costs in referral and admitting discussions. An alternative explanation is that the prepaid plan narrows referral and admitting options based on cost-effectiveness criteria and negotiated prices, allowing the physician to choose among those options without further considering costs.

Areas For Future Study

This study did not examine the attitudes and behavior of physicians who admit patients to only one hospital. Future research might address to what extent a physician's decision to admit to only one facility was based on consideration of its prices.

Referral and admitting practices were used in this study as a proxy for physician decision-making behavior. Future research exploring other components of behavior as indicators of physician cost-sensitivity would be useful. In addition to awareness of price, measures relating to utilization patterns and willingness to consider delivery of care in the least restrictive setting consistent with patient need (e.g., home health care, outpatient surgery) could be explored.

Finally, the findings of this study should be viewed as indicative of physician behavior at a particular point in time. As the capitation and prospective pricing mechanisms account for increasing shares of the health care market, some behaviors can be expected to change, bringing physician actions and attitudes regarding fee information for consumers into closer congruence. However, given the physician's primary responsibility to the patient, we would not predict that price would take precedence over quality factors in clinical decision making. These assumptions can only be confirmed by future research.

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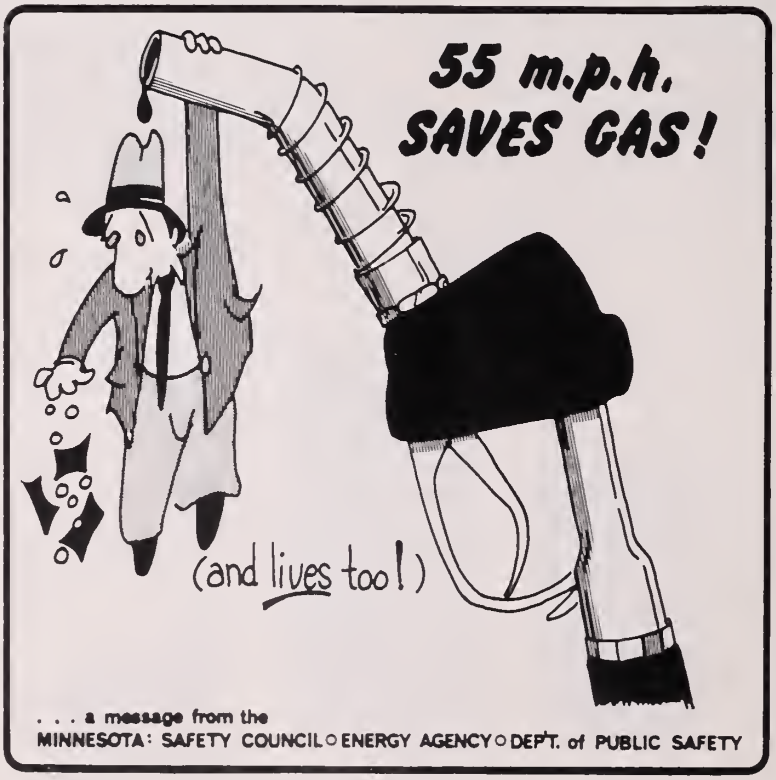
55 m.p.h. SAVES GAS!
(and lives too!)
. . . a message from the
MINNESOTA: SAFETY COUNCIL ○ ENERGY AGENCY ○ DEP'T. of PUBLIC SAFETY

Minnesota Medical Association

Chelation Therapy

ROBERT D. CHRISTENSEN, M.D.* and RICHARD ANDERSON, M.D.†

IN THE SPRING OF 1984, the Interspecialty Council of the Minnesota Medical Association formed a subcommittee to review chelation therapy. Serious consideration was given to nineteen different reference reports including the report issued by the Ad Hoc Committee on Chelation Therapy of the Hennepin County Medical Society in July 1983. The HCMS Ad Hoc Committee had reviewed twenty reports on chelation therapy prior to issuing its own report.

Chelation therapy refers to the use of sodium EDTA (Sodium ethylenediaminetetroacetic acid) to treat certain types of atherosclerosis such as angina pectoris, intermittent claudication of the leg or cerebral vascular disease. EDTA is generally administered intravenously over a period of three to four hours several times weekly for a total of 20 to 40 treatments. The course of treatments is sometimes repeated after a rest period. Vitamins, minerals and other drugs are often administered at the same time.

The following conclusion, as reported by the Hennepin County Medical Society, and published in MINNESOTA MEDICINE February 1984, was found to be relevant and timely, and has been adopted by the Minnesota Medical Association Interspecialty Council.

> "The use of Na_2EDTA to treat atherosclerosis is not supported by the available data. All studies claiming therapeutic benefit are flawed in one or more aspects of experimental design, the most important of which is the lack of suitable control groups. The clinical use of Na_2EDTA to treat any form of atherosclerosis has no scientific basis and is not an acceptable therapy for this disease.
>
> "EDTA chelation therapy should be regarded as investigational because of a lack of objective evidence of its efficacy and questions regarding its safety. Studies involving the use of Na_2EDTA should be performed by trained investigators using rigorously designed protocols capable of providing useful information. It is inappropriate and misleading for medical practitioners to offer chelation to patients as an "experimental" therapy if the drug is being administered as a routine clinical treatment rather than as part of such a study."

The members of the Interspecialty Council serving on the subcommittee to review chelation therapy included Richard Anderson, M.D.; Paul Bowlin, M.D.; Robert Lindell, M.D.; Tim Pryor, M.D.; and Kusum Saxena, M.D.

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*Chairman, MMA Interspecialty Council.
†Chairman, Subcommittee to Review Chelation Therapy.

Iridology

ROBERT D. CHRISTENSEN, M.D.* and O. GUY JOHNSON, M.D.†

THE SUBCOMMITTEE TO Review Iridology formed by the Minnesota Medical Association's Interspecialty Council, was assigned the responsibility of reviewing all available literature on the practice of iridology.

Iridology, called a diagnostic tool, is a method of diagnosing disease or ill health by inspection of the iris topography. It was developed during the middle of the 19th century by Dr. Ignatz Von Peczely of Hungary while in prison following the 1848 rebellion in Hungary.

A pseudoscientific, anatomical jargon was developed by iridology practitioners but lacks any relationship to retinal pathology.

Iridology consists of numerous claims, such as detection of illness before physical symptoms appear, evaluation of the effectiveness of treatment by acupuncture, homeopathy and other alternative healing methods, and studying the two irises to obtain information about all parts of the body simultaneously. But iridology is without pathological or anatomical correlation and is unsupported and unscientific.

The committee concluded that the practice of iridology was without scientific basis and, additionally, has the significant potential for false positive and false negative diagnoses. The committee also ques-

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*Chairman, MMA Interspecialty Council.
†Chairman, Subcommittee to Review Iridology.

tioned the negative impact of the emotional and economic burden of falsely labeling the healthy as having disease. Further, a false negative analysis has the potential for harm when patients rely on iridology and fail to receive proper treatment.

The only "clinical" trial, of which the committee was aware, offered photographs of eyes from normal patients and those with renal disease to three ophthalmologists and three iridologists. (The "kidney area" on the iridology chart is large and easy to photograph and was thus agreed to by iridologists.) The results revealed that:

> "Iridology had no clinical or statistically significant ability to detect the presence of kidney disease. Iridology was neither selective nor specific, and the likelihood of correct detection was statistically no better than chance."(JAMA 242: 1385-1389, 1979.)

Members of the MMA Interspecialty Council comprising the committee were O. Guy Johnson, M.D.; James Bishop, M.D.; Ismail Barrada, M.D.; Raymond Croissant, M.D.; and James Trautmann, M.D.

Cover Photograph

"Snowfall at Castle Creek"

We again admire the photograph expertise of Dr. Thomas A. Ala with his photograph "Snowfall at Castle Creek."

Dr. Ala told the editors the photograph was taken from a bridge overlooking Castle Creek in Aspen, Colorado, in December, 1974, the morning after a six inch snowfall.

He used a Nikon FTN camera, 105 mm lens, Kodachrome 64 film, 1/125 sec. f 2.8 exposure.

Dr. Ala's slides have graced the covers of MINNESOTA MEDICINE many times over the past few years. He is completing his residency in neurology.

8th Annual Update
Practical Cardiology

The 8th Annual Update in Practical Cardiology will be presented by the Minneapolis Heart Institute on April 19 and 20, 1985, on the campus of Abbott Northwestern Hospital in Minneapolis, Minnesota.

Program: The Failing Heart with guest faculty: Dr. Karl T. Weber — expert in congestive heart failure from Michael Reese Hospital, Chicago, Ill. Dr. William DeVries — surgeon for the artificial heart, Humana Heart Institute International, Louisville, Ky. Dr. Jack Copeland — Cardiovascular transplant surgeon, Arizona Health Sciences Center.

Contact: Cheri Galbraith, R.N., Minneapolis Heart Institute, Suite 700, 2545 Chicago Avenue South, Minneapolis, Minnesota 55404, 612/872-3975.

MMIE Malpractice Claim Review

Family Practice

MMIE Risk Management Committee
Frank E. Johnson, M.D.
Chairman

Allegations

Negligent prescription of Amoxicillin.

Facts of Case

The patient, a 38-year-old male, first consulted Dr. A on April 16th for anxiety-related problems. On that visit he gave a history of allergies to penicillin and cortisone; these allergies were documented in the patient's chart. On May 8th, the patient saw Dr. A with complaints of having had nasal discharge, cough and congestion for three days. On examination, Dr. A found fluid behind the eardrums, the nose was hyperemic on the mucosa and the lungs were clear. A diagnosis of possible sinusitis was made and Dimetapp and Amoxicillin were prescribed.

The patient called Dr. A on the 10th, stating he had developed a red, itchy rash. He was placed on Benadryl and told to discontinue his medications. That evening, the patient went to the hospital emergency room with the symptoms of rash, itching, high temperature, diarrhea, and vomiting. An allergic reaction was diagnosed and Sus-Phrine and Epinephrine injections were given.

The next day, the patient consulted an allergist who recorded generalized erythema, itching and peeling of the skin. The symptoms resolved slowly over approximately one month.

Disposition

$3,500 settlement.

Reason for Settlement

Dr. A admitted that he was preoccupied with personal business on May 8th and that this patient was an ''add on'' to a busy office schedule. Because of this, he failed to review the patient's history and negligently prescribed Amoxicillin despite the documented allergy to penicillin. The patient was able to provide proof of both physical damages and lost time from work due to the negligent prescription.

Risk Management Comment

Drug-related injuries, including allergic reactions, account for 10% of all malpractice claims and losses. Frequently, these injuries are caused by physicians failing to adequately consider the medical history. All pertinent patient information should be reviewed before prescribing medications or other treatment with potential side effects. The medical record should be organized in such a manner that all allergies and other significant history are easily and quickly retrievable.

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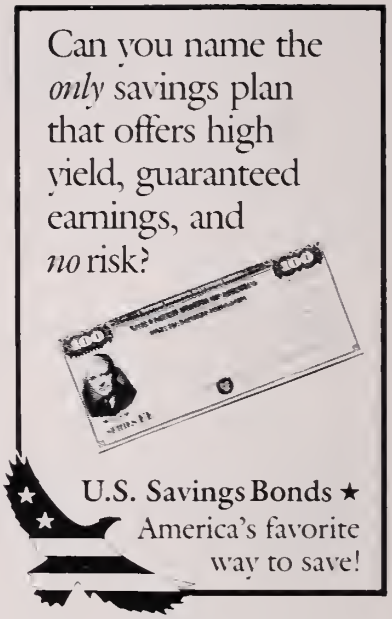
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Christian Hospital Northeast-Northwest, a 728-bed acute care regional health care center in suburban North St. Louis County, seeks physicians to staff our expanding episodic care centers on a full- or part-time basis. Take advantage of an opportunity to use your training without continuing overhead expenses or investment capital. In addition, our staff scheduling offers you the freedom to spend time with your family or pursue the recreational and cultural advantages of metropolitan St. Louis.

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Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings*, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

February, 1985

4-8 Clinical Gastroenterology, 1985; Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

4-9 Northwestern Med. Association-40th Annual Meeting; CME, Univ. of MN Medical School; Sun Valley, Idaho; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

3 Burn Care Update — 1985; St. Paul Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

18-22 Current Problems in Cardiovascular Diseases; Mayo Clinic/Mayo Foundation; Walt Disney World, Hotel Royal Plaza, Lake Buena Vista, FL; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

22-23 Pediatric Update for Primary Care Physicians; Univ. of MN Medical School and St. Paul-Ramsey Med. Center; St. Paul, MN; CONTACT: Ruth K. McIntyre, 612/221-3980.

23-March 2 Office Management of Common Orthopaedic Problems; Minnesota Medical Association and Minnesota Orthopaedic Society; Sheraton World, Orlando, FL; CONTACT: Eugenia C. Kassar, Director, CME & Meeting Services, MMA, 612/378-1875.

MARCH, 1985

2-6 Advanced Clinical EMG; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW Rochester, MN 55905; 507/284-2085.

2-9 St. John's Hospital Winter Seminar; St. John's Hospital; Vail Village Inn, Vail, CO; CONTACT: Margo Moseng, 403 Maria Ave., St. Paul, MN 55106; 612/228-3129.

6-9 Third Annual Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

13-15 MAFP Spring Refresher-House of Delegates Meeting; MN Academy of Family Physicians; Radisson South Hotel, Bloomington; CONTACT: Chari Konerza, MAFP, 2221 University Ave. SE, Suite 426, Mpls., MN 55414; 612/623-9559.

22 Emotional Trauma in Emergency Medicine; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

27 BME Workshop — "The Patient and the Practitioner: Personal Morality and Public Policy"; MN Interreligious Committee for Bio-Medical Ethics: Minneapolis, MN; CONTACT: Trudy Rogness Jensen, Chair, 4420 Philbrook Lane, Mpls.,MN 55424, 612/922-3537

28-30 Cardiopulmonary Medicine Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

APRIL, 1985

1-2 Annual Ophthalmology Specialty Course, "Glaucoma: Mechanisms and Management"; Dept. of Ophthalmology and Office of CME, Univ. of MN Med. Sch.; Holiday Inn Downtown, Mpls., CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

11-12 Third Annual OB/GYN Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

13 MSCP Spring Seminar; Minnesota Society of Clinical Pathologists; Hyatt Regency, Minneapolis; CONTACT: Pam Lindberg, MMA, 2221 University Ave. S.E. — 400, Mpls., MN 55414, 612/378-1875.

18-19 Pediatric Days; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

19-20 8th Annual Clinical Update in Practical Cardiology; Abbot-Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, 800 E. 28th St., Mpls., MN 55407, 612/874-4300.

22-26 Diagnostic & Therapeutic Concepts in Clinical Endocrinology, 1985; American College of Physicians; Mayo Clinic; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

26 New Technology in Medicine; The Duluth Clinic, Ltd.; Fitger's Inn, Duluth, MN; CONTACT: J.G. Brueggemann, M.D., 400 East Third St., Duluth, MN 55805; 218/772-8364.

26-27 Frontiers in Medicine; St. Joseph's Hospital; St. Paul: CONTACT: Judy Stroebel, Public Relations, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3062.

(April continued)

26-27 Ophthalmic Reviews — 1985; Mayo Clinic Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

MAY, 1985

1-3 Pulmonary Function Testing Workshop; St. Paul-Ramsey Medical Center; St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

3 ENT in Primary Care; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Pub. Relations, 69 West Exchange St., St. Paul, MN 55102, 612/291-3062.

6-10 Practice of Internal Medicine — 1985; Mayo Clinic/Ma Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW Rochester, MN 55905; 507/284-2085.

18-21 Impact of Modern Perinatal Care on Society, 15th Annua Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, Mpls., MN 55455, 612/373-5718.

AUGUST, 1985

1-4 Second Annual St. Paul-Ramsey Trauma Conference; St. Paul-Ramsey Medical Center; Fox Hills Resort, Mishicot, WI; CONTACT Ruth K. McIntyre, 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Dalkon Shield I.U.D.s

The A. H. Robins Company has initiated a program to alert consumers to the potential dangers of continued use of Dalkon Shield I.U.D.s. Charges for removal of I.U.D.s resulting from this campaign should be billed directly to A. H. Robins Company, % Dalkon Shield Removal Program, P.O. Box 26609, Richmond, VA 23261-6609.

Medicare Economic Index Survey

The National Opinion Research Center (NORC), under contract with the U.S. Department of Health and Human Services, will be conducting a phone interview with 5,000 physicians nationwide over the next few months. The purpose of the data collection is to update the Medicare Economic Index which will be used to adjust Medicare prevailing charge limits at the end of the fee freeze period. If you are selected as part of the sample, please participate.

We suggest you duplicate this for your file.

MMA ANNUAL MEETING
"THE PHYSICIAN AS ARTIST"
May 8-10, 1985, Radisson St. Paul Hotel
Information Sheet

FEE: $10 per item
($5 for residents
and medical students)

ELIGIBLE EXHIBITORS: All Physicians

EXHIBIT HOURS: 8:00 a.m.-5:00 p.m., Thursday, May 9
8:00 a.m.-5:00 p.m., Friday, May 10

APPLICATION DEADLINE: APRIL 10, 1985

DELIVERY must be made in person between the hours of 8:00 a.m. and 3:00 p.m. on Wednesday, May 8, 1985, to The Senate Suite at the Radisson St. Paul Hotel (lower level).

PLEASE DO NOT SHIP DIRECTLY TO THE RADISSON ST. PAUL HOTEL OR TO THE MINNESOTA MEDICAL ASSOCIATION OFFICE. Neither the Hotel nor the MMA office has space for storage prior to the exhibit. Only items that can be personally delivered and picked up will be accepted.

SET-UP AND DISPLAY will be handled by the Art Show Chairman with the assistance of MMA staff. Framed pieces and heavy pieces to be suspended should be equipped with wire. Mounting tape will be used to mount lightweight photographs, drawings, etc. on the walls and display panels. Shelves, tables and pedestals will be used for three-dimensional objects.

EXHIBITS MUST BE PICKED UP between the hours of 5:00 p.m. and 6:00 p.m. on Friday, May 10. The MMA cannot ship exhibits back to their owners.

JUDGING, PRIZES: An expert judge will make awards on Thursday, May 9. Ribbons will be placed on the winning items.

ACCEPTABLE ENTRIES: All forms of art are encouraged. Entrants should choose artistic creations as opposed to craft products.

SECURITY: Guard service for the exhibit room will be hired between 8:00 a.m. and 5:00 p.m. on Wednesday, Thursday and Friday. When the room is not occupied by a guard, it will be locked.

LIABILITY: The Minnesota Medical Association, the Radisson St. Paul Hotel, Radisson Hotel Corporation, and Brede, Inc., are not responsible for injury to persons or damage to or loss of property. It is understood that neither the Hotel nor the legal entities which own, lease and/or operate the Hotel; the Minnesota Medical Association; nor Brede, Inc.; nor their members, officers, directors or employees shall be responsible or liable for injury to any person or persons or for loss of or damage to any property belonging to the exhibitor or any person or persons. The exhibitor assumes complete responsibility and liability for all loss, damage or destruction of the property of the exhibitor, his guests and all property of the Hotel used by the exhibitor or brought upon the Hotel premises in his behalf.

The exhibitor indemnifies and agrees to hold harmless the Minnesota Medical Association; the Radisson St. Paul; Brede, Inc.; and the legal entities which own, lease, and/or operate the Radisson St. Paul Hotel; and their members, officers, directors and employees against any and all liability whatsoever arising from any or all damage to property or personal injury or loss caused by the exhibitor or his agents, representatives, employees, or any other person.

AM#1, ART.INFO

ART SHOW APPLICATION FORM

Deadline for Submission: April 10, 1985
Fee: $10 per item ($5 for residents & medical students)

NAME ____

ADDRESS ____
(STREET)

____
(CITY, STATE, ZIP)

OFFICE PHONE ( ) ____________________ HOME PHONE ( ) ____________________

Only one entry may be made per person per category. (Multiple paintings, drawings or sculpture may be submitted if they are in different media.) Please request additional forms if necessary and complete one form for each entry.

CATEGORY:

___ Paintings (medium: ____________)

___ Drawings (medium: ____________)

___ Ceramics

___ Sculpture (medium: ____________)

___ Jewelry

___ B/W Photography

___ Color Photography

___ Other (specify: ________________ ________________)

BRIEF DESCRIPTION (subject, materials used): ______________________________

____

TITLE: ____

DIMENSIONS/SIZE: ____________________ ESTIMATED VALUE: ____________________

(A photograph must be submitted with the application form.)

I agree to the terms indicated on the Information Sheet printed on the reverse of this form.

______________________________ ____________________
SIGNATURE DATE

Please attach the entry fee (payable to Minnesota Medical Association) and photograph and return to:

Department of Continuing Medical Education & Meeting Services
Minnesota Medical Association
2221 University Avenue S.E., Suite 400
Minneapolis, MN 55414
612/378-1875

A list of all entries will be mailed to entrants the last week preceding the show.

AM#1, ART.APP

Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400,Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

INTERNIST-NEPHROLOGIST, INTERNIST-GASTROENTEROLOGIST, INTERNIST-GENERALIST — Sought for multispecialty group practice in Northern Minnesota. New 175 bed hospital with dialysis unit, full diagnostic services and support facilities. Nationally acclaimed school system and broad range of recreational facilities. Excellent opportunity for aggressive internist. Liberal compensation system. Excellent fringes. Telephone calls will not be accepted. Send curriculum vitae to: John Brust, Mesaba Clinic, 1814 14th Avenue East, Hibbing, MN 55746.

WANTED: Young family practitioner to join a ten physician group in western Wisconsin. Contact R. M. Hammer, M.D., River Falls, Wisconsin, 54022. Telephone (612) 436-8809 or (715) 425-6701.

OPHTHALMOLOGIST, NEUROLOGIST — Otolaryngologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

FAMILY PHYSICIAN needed for a 5-physician group in a growing suburb in the metropolitan area, offering amenities of both cosmopolitan and rural life-style. Very competitive compensation and benefits. Contact Jeff R. Michell, M.D. or Gloria Vierling, Business Manager at 612-445-6440 in SHAKOPEE, MINNESOTA 55379.

EMERGENCY PHYSICIAN, Los Angeles area, receiving hospital for paramedics, base station control, $90,000+ per year, paid malpractice. Contact Philip J. Fagan, Jr., M.D., P.O. Box 9369, Marina Del Rey, CA 90295. (213) 822-1312.

ST. PETER, MINNESOTA: Available immediately. Position of senior staff physician to work with progressive and forward-looking staff and administration to meet the medical needs of the patients at St. Peter Regional Treatment Center. JCAH accredited. Delightful setting in the heart of the Minnesota River Valley. University town of 10,000, ten minutes from Mankato, and one hour from the Twin Cities. Stipend high-60s for BC/BE (or equivalent experience) with excellent benefit package and an opportunity for expanding income through minimal call. Please contact S.K. McHutchison, M.D., Clinical Director, for further information at the following address: S. K. McHutchinson, M.D., St. Peter State Hospital, 100 Freeman Drive, St. Peter, MN 56082 (507) 931-7707.

WANTED: OB-GYN, family practitioner and internal medicine to join multi-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent. Many fringe benefits included. Write MINNESOTA MEDICINE (742) 2221 University Avenue, S.E., Suite 400, Minneapolis, Minnesota 55414.

GENERAL SURGERY RESIDENCY PROGRAM Director needed by 210 physician multispecialty private group practice in central Wisconsin. Board certified general surgeon with subspecialty training and interest in peripheral vascular surgery plus strong academic interests are being considered. This surgeon would join a seven member General Surgery Section with subspecialty expertise and experience. A clinical appointment through the University of Wisconsin Medical School is available as are research opportunities. Please call Gail H. Williams, M.D., Surgery Department Chairman, or Sidney E. Johnson, M.D., Medical Director collect at (715) 387-5609 and (715) 387-5253 respectively or send curriculum vitae to: Gail H. Williams, M.D., Chairman, Department of Surgery; Marshfield Clinic; Marshfield, WI 54449.

(Continued on page 76)

Classified Advertisements

(Continued from page 75)

Ob-Gyn and family physician — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

Occupational medicine — Position available with Mankato Clinic, Ltd. Full range of pre-employment, occupational medicine and emergency duties, along with general practice as desired. All-American community; full range of benefits and liberal time off; salary first year, incentive pay after. For more information, call collect: R.F. Roskens, Adm. or B.C. McGregor, M.D., 507-625-1811.

Needed immediately, physicians for General Practice, Internal Medicine specialists and pediatrican for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D., at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

Physician opportunities available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

Genesis business finance — "The Business Loan Professionals." Equity loans, equipment loans to build your practice. Professional loan packaging. Nationwide contacts. Call (612) 559-7176. Write: 3030 Harbor Ln. N., #200F; Minneapolis, MN 55441.

Family practice oriented multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

Psychiatrist to join progressive multi-specialty group of 50 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: Harris P. Hinderaker, M.D., 101 Willmar Avenue, Willmar, MN 56201.

Board eligible cardiologist interested in establishing an invasive service in a north-central metropolitan, university-affiliated hospital in association with an internists group needed. Interest in internal medicine necessary. Write Minnesota Medicine (743) 2221 University Ave. S.E., Suite 400, Minneapolis, MN 55414.

Family practitioner/urgent care center to join existing group, Los Angeles beach area, $80,000 per year, paid malpractice, dynamic, growing group with room for advancement. Assistance with moving expenses. Contact Philip J. Fagan, Jr., M.D., P.O. Box 9639, Marina del Rey, CA 90295. (213) 822-1312.

Practice opportunity. Assume Minneapolis-suburban very active practice. Family practice or internal medicine emphasis. Low investment. Write: Minnesota Medicine (748) 2221 University Ave. SE. #400, Minneapolis, 55414.

Brainerd medical center, a 14 multispecialty clinic, seeks B.E. specialists in Orthodpedic Surgery, ENT, and OB/GYN. Good benefits and negotiable salary. Brainerd is becoming a regional medical center with new 150+ bed hospital and a growing, progressive medical community. Beautiful area, ideal for families and outdoors enthusiasts. Contact Curtis J. Nielsen, Clinic Administrator, P.O. Box 524, (218) 829-0354 or 829-4901, Brainerd, MN 56401.

Family practice physician(s) wanted, board certified or eligible, to join four physicians in a growing family practice group. Position(s) are available on a full-time or part-time basis. Practice is located in area that offers advantages of a smaller community, while only minutes away from the Twin Cities. If interested, call Michael Stein, Assistant Manager, at (612) 448-2050.

Wanted: One or two internists to join solo internist. Write: Internist, Box 1161, St. Cloud, MN 56302.

ORTHOPAEDICS: State-of-the-art equipment and full support of entire community's medical staff make this opportunity particularly attractive in our service area of 45,000. Currently, our community does not have an orthopaedic surgeon. However, coverage will be provided upon your decision to relocate. Area also provided excellent recreational activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTITIONER – Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

FAMILY PRACTICE — A progressive community located in scenic northern Wisconsin offers a variety of recreational and practice opportunities. A family practitioner is definitely needed, and we offer financial backing and guarantees. Our area provides an excellent education system for your family. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

EAST RANGE CLINICS, Ltd. seeks physicians in the following specialties: obstetrics/gynecology, orthopaedic surgery, and ophthalmology. Opportunity to enter established practice with progressive multi-specialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

FAMILY PRACTICE — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTITIONER needed to join solo practitioner and physicians' assistant in Gettysburg, SD. Practice has 6,000 active charts and patients are drawn from a wide area. The 29-bed, local hospital has consulting surgeon, radiologist and pathologist available with easy access to all other specialties. Close to recreation area with excellent water sports, fishing and hunting. For more information, contact David Yecha, M.D., 608 East Garfield, Gettysburg, SD 57442, (605) 765-2431.

PEDIATRICS AND FAMILY PRACTICE positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

INTERNAL MEDICINE group (two physicians) seek two physicians; must be board certified and active in IM and board eligible in one of following subspecialties: gastroenterology, endocrinology, pulmonary or infectious diseases. First year salary negotiable; after one year arrangements for buy-in to full partnership if mutually agreeable. Contact R.I. Lubin, M.D., 1725 East 19th Street, #501, Tulsa, OK 74114, (918) 745-6990.

FAMILY PHYSICIAN, INTERNIST, SOUTHWESTERN MINNESOTA Rural Primary Care Group — 12 physicians (8 Family Physicians, Internist, 2 General Surgeons, Pediatrician) in an Agricultural-Commercial-University town of 11,000 invites residency trained/board certified Family Physician and Internist to join progressive patient-oriented practice in a recently built hospital and ambulatory care center. USUAL CHAMBER OF COMMERCE CLAIMS NEARLY TRUE HERE! C. P. Martin, M.D., Doctors' Plaza, Marshall, MN 56258; Phone: (507) 532-9631.

BOOKEEPER - MEDICAL - 20 years experience. A.A. degree from Univ. of MN. Degree from Rasmussen Business College, St. Paul. Accounts receivables and payables, payroll, tax forms, financial reports, billing. Prefers East Metro Area. Call 489-2308.

(Continued on page 78)

(Continued from page 77)

1985 CME Cruise conferences on selected medical topics — Caribbean, Mexican, Hawaiian, Alaskan, Mediterranean. 7-14 days year-round. Approved for 20-24 CME Cat. 1 credits (AMA/PRA) & AAFP prescribed credit. Distinguished professors. Fly roundtrip free on Caribbean, Mexican, & Alaskan cruises. Excellent group fares on finest ships. Registration limited. Pre-scheduled in compliance with present IRS requirements. Information: International Conferences, 189 Lodge Ave., Huntington Station, N.Y. 11746. (516) 549-0869.

Group health, inc., the midwest's largest and oldest pre-paid multispecialty group, seeks associates in *Allergy, Family Practice (urgent care), Internal Medicine, Geriatrics, Ophthalmology, Child Psychiatry,* and *Obstetrics/Gynecology*. Must be board certified or eligible. Excellent facilities, comprehensive fringe benefits, highly competitive earnings. Send curriculum vitae to: Paul J. Brat, M.D., Medical Director, *Group Health, Inc.*, 2829 University Avenue Southeast, Minneapolis, Minnesota 55414. An equal opportunity employer.

Family Practice: Oconto Falls, Wisconsin. Thirty miles Northwest of Green Bay. Established practitioner needs associate to share fully-equipped clinic adjacent to modern 50-bed hospital. Income guaranteed by hospital. No ER call required. Abundant hunting, fishing, and recreational opportunities. Contact Brett Wilson, D. O., 835 So. Main Street, Oconto Falls, WI 54154 or call (414) 846-2287 or after hours (414) 846-2041.

Want to buy a practice: Family Practice, SOLO or share/group; midwest. Prefer Twin Cities or radius 100 miles, but will consider all other places. WILLING TO WAIT FOR UP TO ONE YEAR. Thinking of retirement or relocation? I am an MD/diplomate ABFP. Write Minnesota Medicine (744), 2221 University Avenue. SE #400, Minneapolis, Minnesota 55414.

Attention general practitioners. Ready for a change of pace? The Air Force has openings for general medical officers. You can enjoy regular working hours, 30 days of vacation with pay each year, worldwide travel opportunities and a unique and enjoyable life-sytle for you and your family, while serving your country. Ask a health professions recruiter about our outstanding pay and benefits package. Contact: Lt. Kalonick (612) 331-8216.

PM&R graduate (June, 1985) with public relations and fund raising experience seeks challenging position. Will begin practice in late summer. Married, with family. Graduated from University of Louisville. Prefers Twin Cities, northeast or southeast Minnesota. Contact: T. Stewart, M.D., 5255 Triton Drive, Minneapolis, MN 55422.

Needed: X-ray unit (100/100 to 300/125), x-ray room accessories and manual darkroom accessories. Will consider purchase of entire unit or individual pieces. Contact: Dr. David Kolb % North Suburban Chiropractic Office, Suite 203, 2151 N. Hamline Ave., Roseville, MN 55113. (612) 631-1501.

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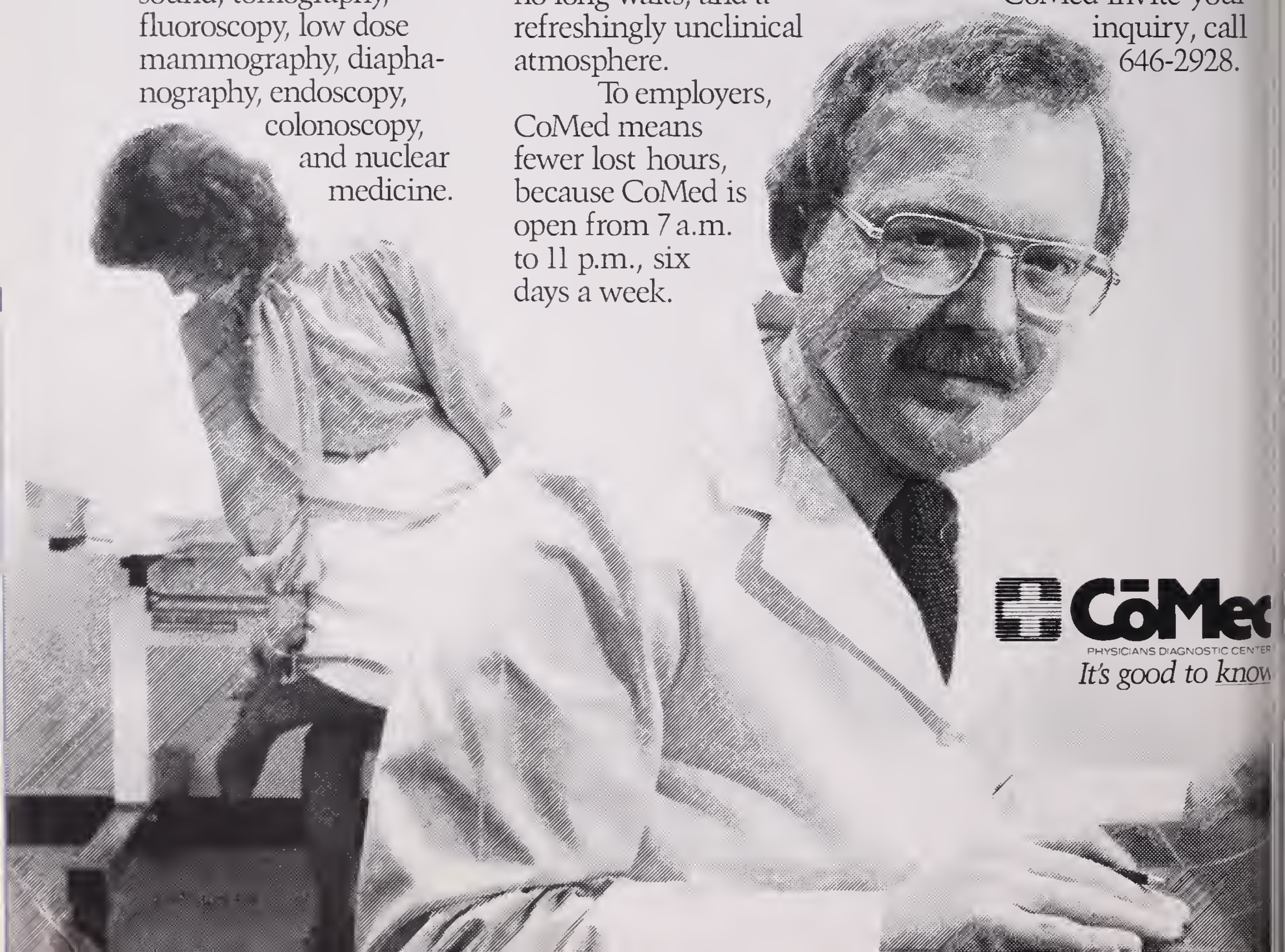

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President's Letter

Medical Manpower Surplus

THE GRADUATE MEDICAL EDUCATION National Advisory Committee (GMENAC) predicts a 70,000 physician surplus by the year 1990. In 1971 there were approximately 152 physicians per 100,000 population in Minnesota. By 1980 there were 194. Growths in numbers and types of allied health manpower has even been more rapid.

Former HEW Secretary Califano felt that by increasing the number of physicians, health care costs would be driven down. Evidence now indicates that the opposite is true. In addition to the cost to the taxpayer producing these physicians, excess physicians will often find something to do. The approximate cost of educating a physician is $16,778 per year. More tragic, physicians who spend a great deal of time and money being trained will be unemployed or underemployed.

Other adverse effects of excess physicians will be the disuse atrophy of medical talent. Highly trained specialists will not see enough cases to stay proficient. On a longer time basis, the attraction of our profession to highly motivated, and bright young people will be diminished with little prospects for practice opportunities.

Patient visits for office based practitioners have declined an average of 6 percent from 1970 to '81. Physician graduates have increased three times the rate of the population over a three-year period ending in 1980. In Minnesota, medical school graduates have more than doubled since 1970 from 160 per year to 327 per year.

Physician perception of total number of physicians in their community five years ago and now has changed from a majority saying "about right" to concern about "too many." (Figure 3.5, page 102 of the Physician Perception of Medical Manpower, Minnesota Medical Association, December 1982.) This situation has changed from a condition 10 to 15 years ago when we were asking the Legislature to expand the size of medical school classes because of physician shortages. Organized medicine is on record as supporting medical school expansion when there was a shortage. It is my feeling that those of us, who are in the field with the perception that there are too many physicians, now ought to speak out in the opposite direction. It had been said that market forces should be allowed to work in this situation. However, special circumstances dictate that a more preemptive system needs to be developed. From the time a student is admitted into medical school until the completion of a residency could be eight to fifteen years. This latent period is too long to allow market forces to work. We'll always be out of phase.

To prevent these wide oscillations in medical manpower, it would seem a more orderly system should be developed. One such system might involve the formation of an advisory body. I'll call it the Medical Manpower Advisory Committee (MMAC). I stress the word advisory as opposed to regulatory. An ongoing advisory body would be able to better anticipate and study needs and dampen the wide oscillations that now exist. It might consist of a board such as GMENAC put together. This would include governmental representatives, medical educators, lay people, third-party carriers, legislators and physicians. MMAC could make predictions and recommendations on medical manpower needs that would be passed onto medical schools. Thus, more accurate predictions of medical manpower needs should prevent these wide swings from shortages to excess. This committee would meet regularly, not just when a crisis situation exists.

By using an independent body, the public perception of organized medicine regulating the quantity of physicians would be removed. Physicians should be minority representatives on this body.

The AMA is currently addressing the situation with foreign medical graduates, American-born foreign graduates, and off-shore schools. There is no easy solution for this, but it would appear that physicians coming from areas that are medically underserved should be mandated to return to their country where there is a physician shortage.

The North Central Medical Conference has convened a committee on manpower needs in our region.

There are many medically underserved areas in the world that physicians near retirement or are economically secure might consider serving.

Although the ratio of physicians to population varies greatly by region in Minnesota, that is 87.7 percent per 100,000 in North Central to 272.4 percent in West metro areas, physicians in more rural areas do not differ dramatically from their metro colleagues and trends being anticipated by physicians in their practices in the next few years. Physicians in the pipeline will probably be forced by competitive pressures to fill the vacancies in areas of rural need. But even if we decide to do something today, there are at least eight years worth of student and residents in the pipeline.

We are past due in taking an active role in the medical manpower surplus issue. Roger Brearley, a member of the Common Market Advisory Committee and Specialist Training, said recently in Oxford, England, that "It seems paradoxical that an excess of doctors (in Europe) now constitutes a major threat to health care. Inevitably when there are too many students in training, you get doctors that are less well trained."

In summary, excess numbers of physicians will aggravate health care costs, lead to physician underemployment or unemployment, and eventually will be a deterent for quality students entering medicine.

I urge the formation of an ongoing advisory body, which can better anticipate medical manpower needs, dampen the wide swings in medical manpower needs, and eliminate the serendipitous approach that now exists.

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association

Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

1. Preferably an alumnus of the University of Minnesota Medical School.
2. Not engaged in an academic capacity.
3. Has made outstanding contributions to the Medical School, the University, the Alumni, and the community.
4. Has had a relatively long experience in the field of medical science or a related field.

Nominations for the 1985 awards should be sent immediately to:

Konald A. Prem, M.D., Chairman,
Harold A. Diehl Award Committee
Box 395, University of Minnesota Hospitals
Minneapolis, Minnesota 55455 (612) 373-7635

Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.

Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: How Hospital Administrators Think. Focus Group Findings

Eighth in a Series. Second of Two Parts.

> *"By changing the incentives that have governed the behavior of hospitals, Congress has made the survival of hospitals dependent upon their medical staffs' utilization of hospital resources. Congress has thereby changed fundamentally the relationship between hospitals and the members of their medical staff, the effects of which hospitals and physicians will be adjusting to for many years . . . Added to their difficulties is the intensifying competition among hospitals for survival, a competition that requires an unprecedented degree of collaboration among a hospital's trustees, CEO, and medical staff."*
>
> Basil J. F. Mott, *"Trusteeship and the Future of Community Hospitals,"*
> American Hospital Publishing, Inc., 1984

> *"Medicine is not a business, but there is a market for its services, and how management accommodates itself to physicians will tell a lot about the future configuration of the system."*
>
> Jeff Goldsmith, *"Death of a Paradigm: The Challenge of Competition,"*
> Health Affairs, Volume 3, pages 5 to 20, February, 1984

NORTHFIELD, MINNESOTA — In the second part of this editorial, I shall describe how hospital administrators think. This farm seems as logical a place as any to write about hospital administrators and their struggle for survival of their institutions.

Out here on the farm, the mind inevitably gravitates to the basics — economic survival, cooperative efforts, and the 3Rs. Until recently, hospital administrators haven't thought about hospitals in terms of survival. They haven't had to. The government safety net — Hill-Burton, Medicaid, and Medicare — has always protected them against financial falls. Now, with the safety net gone, administrators must return to basics, and so must we physicians.

3 Rs

I call the three basic forces at work the 3Rs.

1. A series of *Revolutions* are going on among the main buyers of health care — government and businesses — and also among consumers of that care. We are in the throes of dual revolutions in the financing and delivery of care. For the first time, buyers will pay only a fixed amount for a given hospital case. For the first time, hospitals must respond to market forces — or close. For the first time, hospitals must cut internal operating costs, diversify outside their walls, and collaborate closely with their medical staffs. For the first time, patients are moving away from hospitals, and hospitals are moving where the patients are. For the first time, hospitals are being forced to move out into the market, where they may compete with their own medical staff, rather than waiting for the market and physicians to come to them.

As with most revolutions, everything is turning upside down. I recently heard the Medical Director of Sears speak. He drew a pyramid to represent the "old" medical system. At its apex stood the MDs. In successive layers were hospitals, other providers, insurance companies, businesses, and government. At the base was the consumer. "Gentlemen," the Director said, "Sears is going to turn that pyramid upside down."

With the help of other corporate giants, Sears just might. These other corporations may include for-profit HMOs, retail stores, IBM, ITT, Merrill Lynch, multispecialty clinics, Kaiser Foundation, the Mayo Clinic, or expanding well-capitalized not-for-profit HMOs such as the major four in the Twin Cities. Paul Ellwood forecasts as many as 20 major medical firms may dominate the health industry, and "only a couple of combinations" of not-for-profit hospital firms are likely to be on the list.[1] As he sees it, because of lack of scope, size, and management limitations, traditional insurers, individual physicians, academic medical centers, and community hospitals may have a difficult time competing in this environment. Indeed, Ellwood thinks a hospital with a unified medical staff of 200 may be the "minimum size" to compete successfully.

2. A profound change is occurring in our *Relationships* — with patients, peers, paraprofessionals, and hospital administrators. Patients are becoming more independent — more willing to make choices outside the traditional system. Physicians are more willing to compete with each other — using the tools of management rather than those of professionals. We are undergoing industrialization. Just over half of us now depend on salary in one way or another. In the Twin Cities, you have to work for, belong to, or be affiliated with a competitive medical organization to make it economically. More and more, physicians are fighting turf battles with other health professionals. And physicians and hospital administrators are having to overcome their ambivalent attitudes towards each other for mutual survival purposes.

3. Physicians have a new sense of *Realism*. Most of us have accepted the hard realities of prospective payment, oversupply of physicians and beds, the cost-consciousness of third party payers, the corporate transformation of medicine, the widening of the hospital's corporate umbrella, and hospital-physician interdependence. We see other things happening as well: (1) weak hospitals are becoming weaker (about one-seventh of them may close by 1990); (2) the number of providers are increasing, and the resulting price competition is squeezing hospitals and physicians; (3) HMO membership continues to soar (current Twin Cities market penetration is approaching 40 percent and nationally by 1990, 420 HMOs with 19 million members will exist compared to 243 HMOs with 10 million members now); (4) non-traditional services such as emergicenters, surgicenters, and free-standing clinics are proliferating; (5) the profit squeeze is on because of more doctors, more organized competitors, slow population growth, and government cutbacks; and (6) less capital is available for hospitals as they strive to compete.

The Job of the Administrator

When you're mentally grazing out here on the farm, this business of running a successful hospital looks as easy as herding cows. All you have to do is to get the good milk producers together, feed them, and lead them into the barn. Or, if you're dealing with humans, as Chief Executive Officer of the hospital, you simply put together all the best people, get them to function together in a vital human interrelationship, and form a single dynamic team to meet your goals.

The herd or team approaches may be all right for competitive corporations, but such theories break down with hospitals, which do not function like businesses.

Why not?

For one thing, you are not dealing with cooperative cows, but an independent species of mammal. Hospital medical staffs are made up of *independent professionals* — Knowledge Workers — who move to the beat of their own drummer, who often speak only in their own jargon, who answer only indirectly to the goals of the organization, who may not answer at all to the Chief Executive Officer of the organization. Physicians, it is said, are beholden only to their patients, their practices, and their profession (and, in the Twin Cities, at least, to their Competitive Health Plan).

For another, physicians often live in two worlds — one as a member of the medical staff and the other as a private entrepreneur. What is expected of them as staff members, for which they are seldom paid, often conflicts with the demands of their practice, from which they derive their income. Further, whatever a hospital does— adds specialized services, sets up clinics, organizes surgicenters or urgicenters — may injure physicians' practices. The interests of the physicians' two worlds are not always in sweet harmony.

Finally, physicians live in a different culture and work in different organizations than administrators. I refer here to the authoritative (to patients and society) and to the collegial (to each other) culture of medicine. Because of our socialization as autonomous professionals, we physicians instinctively and automatically distrust anybody with the hierarchial authority of a hospital administrator. Yet, two fundamental different organizational forms — one *hierarchial,* the hospital administrator and his staff, and one *collegial,* the medical staff — exist side by side in hospitals and are expected to run the hospital.

As a hospital administrator, even if you bear the title of Chief Executive Officer, you have little effective leverage over individual physicians. This is why someone has noted the modern hospital is the most frustrating organization to run known to man.

A Former Farmer Story

I am reminded of the story of a former farmer — Harry Truman. When he learned of General Eisenhower's election as President, Truman quipped:"Poor Old Ike. He is going to march into the Oval Office and bark a command. To his astonishment, nobody is going to move."

Truman was talking about the inertia of politics, but he might as well have been referring to the inaction of hospitals. Hospitals are not command structures, and they move by consensus. Hospital administrators may persuade, cajole, organize, assist, guide, facilitate, orchestrate, and even lead by example, but they may not command.

What, then, can hospital administrators do? Well, here is how the guru of modern management, Peter Drucker, suggests managers handle professionals;[2]

"It is the job of the manager to make the specialist realize that he cannot be understood unless he tries to find out the needs, the assumptions, and the limitations of his 'customers,' the other people in the organization. It is the manager who has to translate the objectives of the organization into the language of the specialist, and the output of the specialist into the language of the intended user. It is the manager, in other words, on whom the specialist depends for the integration of his output into the work of others. The manager is the channel through which the true specialist can direct his knowledge, his work, and his capacities towards joint results, through which in turn, he finds out the needs, the capacities, and of the opportunities of the enterprise of which he is a member."

Maybe that is the way Drucker thinks it ought to be with other "specialists", but few of us physicians genuinely consider ourselves as "members of the enterprise." After all, in community hospitals, only a few of us are salaried directly by the hospital, and who controls what is in hospitals is rarely crystal clear in clinical settings. We do not think of ourselves as a "member of the hospital."

Nonetheless, hospital administrators can be effective in setting the tone and shaping the future of their enterprise. In my view, the hospital administrator functions best by: (1) developing a relationship of mutual understanding through open communication with influential members of the medical staff; (2) bringing the medical staff early into the decision making process; (3) seeking ways of helping the physician through providing office space, billing assistance, or simply contributing to his or her's overall efficiency; (4) communicating to the medical staff the economic changes and other pressures impacting on the hospital; and (5) discussing frankly and openly the inherent tensions and conflicts between administrators and physicians.

The Focus Group Approach

Another way of approaching these five objectives, or at least getting the processes rolling, is to hold focus group discussions with the medical staff. These may be lead by a psychologist, an outside consultant, a neutral party, a medical director, or, in my case, a physician with an interest in the problems and opportunities of hospital-physician cooperation.

The person who leads the discussions, the so-called "facilitator," listens to complaints, gathers information, brings feelings to the surfaces, asks for clinical fantasies, fishes for creative ideas, brings different points of view to the surface, searches for point of agreement, investigates the pros and cons of joint partnership ventures.

By doing these things, the facilitator may be able to serve as a catalyst for ideas, confront delicate control issues,change or reshape traditional roles or identities, and even achieve higher levels of interpersonal cooperation between the administrative staff and the medical staff. Or, to state it differently, the facilitator, by recognizing and articulating the forces at work, may be able to initiate creative change. In the revolution that is engulfing hospitals and physicians, economic forces will produce winners and losers. For example,if a physician overtreats a patient in a given DRG, he "wins" more fees, but the hospital "loses" money because the overall bill will exceed the prospective payment.

The winning hospitals and the winning physicians will be those who build on mutual strengths, who seize mutual opportunities, who recognize the importance of creativity and innovation, who acknowledge the inherent conflicts between hospitals and physicians, and who discipline the overusers of hospital services.

How Administrators Think

So how do hospital administrators think?

Like businessmen, of course. Their job is to make sure the institution survives and thrives. Hospital managers know physicians must be on their side. To have physicians on their side, administrators will need physician leaders (what we need, said one administrator to me, are more "physician heroes," i.e. super-doctors who understand both the clinical and business sides of the issues); physician creativity (not an easy trait to find in the conservative culture of medicine, where creative physicians are about as highly regarded as creative accountants); physician cooperation (which is more likely if physicians perceive themselves as the movers and shakers in the decision process); and continuous communication and education about the goals of the organization (this should be done formally and informally in an open manner with no attempt to obscure potential or real conflicts).

Administrators also must think like managers of limited resources. Otherwise, how do you survive in the contracting hospital industry? In the first year of DRGs, there was a widely reported 15 to 20 percent reduction in inpatient hospital length-of-stay for Medicare patients throughout the country, and in the Twin Cities, the non-Medicare patient days are also being sharply reduced. Indeed, if you count total beds "in" *and* "out" of operation, the average Twin Cities' hospital has a daily census of about 50 percent. Add to this picture "deep discounts" of 20 to 25 percent being offered to HMOs and other large providers, and the large proportion of payments that fall into a prepayment category

(70 to 80 percent in some hospitals), and you begin to get a sharper picture of what ''limited resources'' means.

In any event, to cope with having less money, administrators do what they have to do: (1) they cut internal operating costs because of prospective payments, fewer patients, price-sensitive payers, and price discounting; and (2) they diversify externally through such projects as hospital HMOs or PPOs, home health plans, behavioral disorder centers, specialty centers, medical office buildings, joint ventures with other health care businesses, acquisition of other health care businesses, and business partnerships with physicians.

And, finally, administrators think like business realists — they put their money where they think the economic results will be. Results increasingly depend on somebody outside the hospital. These somebodies include former patients, the public at large, employers, benefit officers, insurance companies, HMO officials, and physicians. Traditional hospital profit centers — laboratories, pharmacies, and radiology departments — often become cost centers, and capital investments in these departments are looked upon much more critically, and the income of pathologists, radiologists, and anesthesiologists becomes more subjected to bidding and negotiation. Economic results become more dependent on exploiting outside opportunities — upon establishing new relationships with physicians in their outside practice, with HMOs and PPOs, with other hospitals and hospital chains, and with independent entrepreneurs and consultants. More and more, resources — money, time, and people — must be devoted to these new opportunities and new relationships. Results will go to those who become leaders, who are creative and innovative, and who take the risks to open new market niches. Results will go to those who find out what the health markets want, and are of value to health consumers. And results will go to those who concentrate on those products, those markets, consumers, and users who provide the most revenues.

Physicians' Thinking

These kinds of thinking come naturally to managers who must live in the uncertain and threatening competitive hospital market. But these thinking patterns are alien, even anathema, to many physicians. In the first place, up to this point, physicians have had a powerful grip on a unique resource — medical knowledge — and we have expected people to come to the hospital as the exclusive repository of that knowledge. Second, because we have thought of hospitals as our workshops — economic results for us have been *inside* the hospital. Third, when hospital administrators go outside hospital walls for business, they are perceived to be competing with us on our own entrepreneurial turf.

As physicians, we are now threatened on two fronts, inside the hospital, where our idealism for giving the patient the very best of care and our own economic self-interest have happily coincided, and now outside the hospital, where we have functioned as independent professionals and as small businessmen. For most, the transition from being part of small businesses — where capital, management skills, and marketing savvy are nice but not essential — to intermediate and large business enterprises — where capital, management, and marketing differentiate the winners from the losers — is a radical departure from our experience, our education, and our culture.

Why have we been caught off guard by the corporate transformation of medicine? One reason is that two seemingly different forces have converged — cost-containment and marketing. These two forces seem antithetical, but they are not. Those projects that lend themselves to cost-containment often are done outside the hospital, as hospital-related programs appealing to outside customers, and, as such, they must be marketed to achieve economies of scale, to attract enough potential hospital patients, and to generate sufficient cash flow to justify the investment.

In a 1977 Minnesota Medicine editorial, I predicted hospitals would ease their financial squeeze by employing these ten marketing techniques:[3]

"1. In a broad sense, hospitals will portray the image of community health centers.

"2. This image will broaden their base of support, and give them the opportunity to set up health fairs, preventive health clinics, and special clinics to serve patients in their immediate communities.

"3. Hospitals will establish special programs to serve those patients who are 'in need' of their services, e.g. elderly patients with special diseases, e.g. malignancy or neurological disorders.

"4. Hospitals will establish 'outreach clinics,' staffed by paid hospital physicians, for drugs, alcoholics, smokers, special diseases, and dieting disorders, to bring more patients under their sphere of influence.

"5. Hospitals will organize HMOs so they can capture large organizational audiences, assuring themselves of a stable patient base.

"6. Hospitals will become more consumer oriented, trying to achieve more human internal design, more warmth on the part of the nurses, a better quality of food, and more private rooms with the amenities.

"7. Hospitals will launch capital fund drives with prominent businessmen and physicians as prime targets.

"8. Hospitals will establish multiple publications with targeted mailing lists, to community leaders, to employees, to potential donors, to physicians, and to patients, in order to inform those in the outside world of their services and to solicit their support.

"9. Hospitals will increasingly hire more MDs to staff the institution at all hours, to cover the emergency rooms, to keep the various clinics running, and to run "outside clinics" at sites removed from the hospital.

"10. Hospitals will employ professional fund raisers, directors of development, and directors of community affairs, to contact affluent donors, to raise funds from government granting agencies and philanthrophic organizations, and to keep the community informed."

The Good Old Days

Nineteen Seventy-seven was the good old days — before urgicenters took hold, before for-profit hospital firms hit their stride, before hospital image advertising campaigns took to airways and TV screens, before HMOs entered their explosive exponential growth phase, before prospective prepayment was enacted, before widespread cost discounting came into vogue, and before hospital marketing people talked earnestly about "windows of opportunity" of three to six months for introducing new concepts to the market.

And finally it was the days before hospital managers felt these requisites of competitive success: (1) the purpose of the hospital is to create and keep customers (patients, physicians, HMOs, and other providers); (2) to do that you have to deliver services that patients want at attractive prices to attract enough customers to make those prices possible; (3) to continue to do that, the hospital must produce revenue in excess of costs and must at the same time keep abreast or ahead of competitive offerings; (4) the hospital must clarify its strategies, purposes, and plans, write them down, and clearly communicate them to the senior management and medical staff.

Marketing and Cultural Differences

What I have just said brings to mind again the cultural differences between physicians and administrators. There is no use sugar-coating or papering over these differences. Bringing to the surface these differences may make possible a higher level of cooperation in the future and will lead to common visions, creative joint ventures, and shared successes that will be necessary for survival.

When I was conducting focus groups, I observed that physicians immediately equate the word ''marketing'' with hucksterism, commercialism, advertising, PR activities, or any promotional attention getting devices. No amount of talking about the necessity of marketing, dancing around the sematic differences between marketing and advertising, or arguing about the exigencies of hospital survival will dislodge most physicians from negative attitudes about ''marketing.'' ''Don't give us that marketing jargon,'' said one veteran surgeon to me. ''All any hospital needs is good patient care and giving the doctors what they want — and that is that.''

Given this perception, most of us physicians think of marketing as a waste of time, money, and moral resources. Further, we inflate in our minds the amount of money expended on marketing activities. I would estimate, and this is a loose figure based on interviews with marketing people at five hospitals, that marketing accounts for two to five percent of the operating budgets of most hospitals. Compared to most service industries, this is insignificant. But in the minds of physicians, it is a misdirected extravagance — money that would be better spent for higher nurses' salaries, more sophisticated medical technology, and more investments in their specialties' needs.

As physicians, we do not realize that marketing may include no advertising at all. Indeed, though any marketing strategy is a mix of the four Ps — Price, Place, Product, and Promotion — Promotion, especially in the ethically sensitive world of health care, is often the least important of all.

Keep this in mind, as good administrators do. For a hospital, it is not enough to have the lowest prices in town; it is not enough to have the best and most strategically located physical plant; it is not enough to have the best-researched, best-planned, and most refined health products; and it is not enough to have the highest quality health care – with the best doctors, best nurses, and best administrators working in mutual harmony. Somehow you have to put all these pieces and Ps together. That's what the disciplines of hospital management, marketing and medical care are all about. That's how hospital administrators think anyway.

Closing Remarks

I end this second editorial with these general observations: (1) the economic power in the health care system is shifting from those who provide care — hospitals and physicians — to those who pay for it — government and business; (2) this shift is forcing hospital administrators and medical staff physicians to discuss how to use hospitals wisely without destroying quality; (3) hospitals and physicians are losing their monopolies on inpatient services both had taken for granted — diagnostic testing, surgery, emergency care, and even routine deliveries — and now must consider investing together in alternative delivery systems outside the hospital; and (4) administrators of voluntary hospitals and private physicians are beginning to understand that the health marketplace can be a cruel customer — one that forces them to depend upon one another and one that compels them to sit down together to decide future priorities.

In a subsequent issue, I shall discuss: ''Physicians and Managers — The Search for Common Ground.''

Richard L Reece MD

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The more things change, the more they stay the same.

It's curious that everything seems to be changing, some people notice how few things really change.

Maybe we're old-fashioned, but the Foundation for Health Care Evaluation sees a lot of things that are not changing in today's medical community. Patients still need the best possible care. Physicians still want to provide the best possible care. Certain standards of quality and excellence must escape the pressures of competition and cost reduction.

Revolutionary? No. It's the same idea we were born with in 1971. As a physician-founded and supported peer review organization, the Foundation is uniquely qualified for the times. We encourage change. We shape it, guide it and implement it with traditional, medically proven values and concepts.

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Trauma Prevention

The Necessity of a Seat Belt Restraint Law in Minnesota

RAY MAYRON, M.D.*

THE TIME HAS come for our medical community to support a seat belt restraint law in Minnesota. These are the facts:

Motor vehicle accidents continue to be the leading cause of death for people in the United States who are between the ages of one and forty-four.[1] In Minnesota in 1983 this translated to 558 deaths and 41,086 injuries in 97,371 crashes throughout the state.[2]

It is estimated that the use of seat belts can reduce the number of motor vehicle fatalities by fifty percent.[3] In cases where restraint usage was known, accident data for 1983 in Minnesota indicates that there were only 20 fatalities of persons using restraining devices versus 283 fatalities when the restraining device was installed, but not used. [2]

Clearly, seat belts save lives and there are few who would argue that fact. Yet after nearly twenty years of public education efforts seat belt usage remains at a dishearteningly low figure of 14% for drivers in Minnesota.[4] The reason why is tragically simple — most drivers and passengers who don't use safety belts believe they will not be involved in an accident. However, according to a study done by the University of Michigan's Transportation Research Institute, during a typical 75 year life span an American will experience a traffic crash, has a one chance in fifty of becoming a fatality, and a 50% chance of suffering a disabling injury.[5]

Since education efforts for the use of seat belts have been largely unsuccessful, the next logical step is to have a law requiring their use. This is just what has been done in 30 countries and seven Canadian provinces. The most recent belt law, which went into effect in Great Britain on January 31, 1983 has resulted in a 95% compliance rate with a decline in traffic fatalities of 24.5%.[6]

Why is a world leader in preventive medicine like the United States so far behind other countries in this form of trauma prevention? The basic argument against safety belt legislation is that we are a free society, and the individual should have the right to decide whether or not to wear a seat belt. This ignores the fact that the operation of a motor vehicle has always been subject to government regulation for safety purposes. For example, the law imposes speed limits, and states that drivers must wear corrective lenses if necessary, and cannot drive while intoxicated. People assume that they have the right not to wear a seat belt, but have they paid for that right? Let us look at the costs for Minnesota. The total economic loss resulting from motor vehicle accidents was almost four hundred million dollars in 1983. This figure is calculated from costs estimated by the National Safety Council for fatalities, injuries, and damage resulting from fatal, personal injury, and property damage crashes. The dollar value is determined as follows:[1]

558 Deaths	@ $200,000 =		$111,600,000
5,995 Incapacitating Injuries	@	16,700 =	100,116,500
16,710 Non-Incapacitating Injuries	@	5,100 =	85,221,000
18,385 Possible Injuries	@	1,200 =	22,062,000
68,197 Property Damage Accidents	@	1,090 =	74,334,730
		TOTAL =	$393,334,230

This estimate is based on the calculable costs of wage loss, medical expenses, insurance costs, and property damage. These economic losses are shared, directly or indirectly, by every taxpayer, by everyone who pays for auto, health, or life insurance, and by everyone who pays a hospital bill. The social losses — lost school time, lost work time, and the long term effects on educational achievement and quality of life are immeasurable. No, the individual has not paid for the right not to wear a seat belt.

Laws passed this year are recognizing the need for improved crash protection. In July, U.S. Secretary of Transportation Elizabeth Dole issued new rules requiring automatic crash protection for all passenger cars manufactured for sale in the U.S. on a phased in schedule beginning September 1, 1986. All cars manufactured for the U.S. market after September 1,

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1989, must be equipped with automatic crash protection. However, if states representing two-thirds of the nation's population enact mandatory seat belt laws before April 1, 1989, the requirement for automatic protection will no longer apply. Then why have mandatory selt belt laws when we can wait five years and have automatic crash protection in all new cars? There are several important reasons to have a mandatory seat belt law now.

First, only new cars would be equipped with automatic protection starting in 1989 and it would be at least ten more years until most cars were covered. Consider the fact that new cars have been built to run on unleaded gasoline for almost ten years now and lead in the air is still a problem today. In the next 15 years over 100,000 more American will die if mandatory seat belt laws are not enacted.

Automatic crash protection will most likely be in the form of air bags. However, air bags are only a supplement, not a fully effective alternative to seat belts. Air bags are not effective in roll-over, rear-end, or side collisions which account for 40% of all accidents. In a study conducted by the University of Michigan Transportation Research Institute of roll-over crashes seat belt users suffered over 80 percent fewer deaths from head injuries, and no death from neck injury.[5]

There are additional inadequacies for crash protection using only air bags. Air bags will not necessarily keep occupants inside the vehicle. Being thrown out of a vehicle is 25 times more lethal than remaining inside in the event of a crash.[5] Airbags do not protect the front seat middle passenger. Finally, air bags are effective for only the first impact and will not provide protection if more than one impact is involved in a given crash.

Automatic seat belts have disadvantages of their own compared to our present seat belts. Like air bags they exclude the front middle seat passengers from protection, and in the absence of a mandatory use law many people would disconnect the automatic seat belt.

A seat belt law passed the Minnesota State Senate in 1983, but it failed in the House in 1984 by only seven votes. In July of 1984 New York passed the first state law requiring the use of safety belts in passenger cars. Other states are expected to follow suit in the belief that a large proportion of traffic deaths and injuries are preventable at little or no cost to motorists and taxpayers.

A study by the Highway Users Federation looked at what effect a seat belt would have on Minnesota. It was assumed that 80% of automobile occupants would buckle up if so required by a fully enforced state law. With that figure the number of lives saved annually by seat belts would rise from approximately 35 to 200 and 5,400 serious injuries would be forestalled with a savings of 86 million dollars.[7]

The achievement in New York State was possible in part because their medical community was solidly behind the passage of safety belt legislation. We should do the same in Minnesota. What can you as a health care provider do? Urge your patients to wear seat belts. Contact your state legislators and express your support for seat belt legislation. Impress upon your legislators that the care of human lives is a responsibility shared by both the medical community and lawmakers. Legislators should realize that no matter how much we in medicine strive to improve trauma care, they can do more to save lives with the passage of a seat belt law than we can ever hope to accomplish. The voice of the medical community holds respect in health care issues. Support the campaign for seat belt legislation and take pride in being part of the most significant achievement in preventive medicine for Minnesota since the introduction of widespread immunizations.

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CARDIZEM®
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balances potent coronary vasodilation with a low incidence of side effects

ow incidence of side effects
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ardizem is indicated in the treatment of angina pectoris due to oronary artery spasm and in the management of chronic stable ngina (classic effort-associated angina) in patients who cannot lerate therapy with beta-blockers and/or nitrates or who remain ymptomatic despite adequate doses of these agents.

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Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.

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Reduces angina attack frequency*
42% to 46% decrease reported in multicenter study.[1]

Increases exercise tolerance*
In Bruce exercise test,[2] control patients averaged 8.0 minutes to onset of pain; Cardizem patients averaged 9.8 minutes ($P<.005$).

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2/84

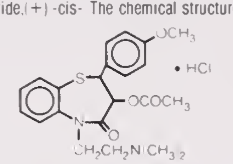
PROFESSIONAL USE INFORMATION

cardizem®
(diltiazem HCl)

30 mg and 60 mg tablets

DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm. CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect, cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), ra asthenia (1.2%), AV block (1.1%). In addition, the follow were reported infrequently (less than 1%) with the order o tion corresponding to the relative frequency of occurrenc

Cardiovascular	Flushing, arrhythmia, hypotension dia, palpitations, congestive hea syncope.
Nervous System:	Paresthesia, nervousness, som tremor, insomnia, hallucinations, and
Gastrointestinal:	Constipation, dyspepsia, diarrhea mild elevations of alkaline phosphatas SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photos
Other.	Polyuria, nocturia.

The following additional experiences have been noted

A patient with Prinzmetal's angina experiencing ep vasospastic angina developed periods of transient asy asystole approximately five hours after receiving a sing dose of CARDIZEM.

The following postmarketing events have been repor quently in patients receiving CARDIZEM: erythema multi kopenia, and extreme elevations of alkaline phosphatas SGPT, LDH, and CPK. However, a definitive cause and effec these events and CARDIZEM therapy is yet to be establis

OVERDOSAGE OR EXAGGERATED RESPONS

Overdosage experience with oral diltiazem has bee Single oral doses of 300 mg of CARDIZEM have been wel by healthy volunteers. In the event of overdosage or exa response, appropriate supportive measures should be em addition to gastric lavage. The following measures may be co

Bradycardia	Administer atropine (0.60 to 1.0 mg is no response to vagal blockade, a isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fu degree AV block should be treated diac pacing.
Cardiac Failure	Administer inotropic agents (isopro dopamine, or dobutamine) and diure
Hypotension	Vasopressors (eg, dopamine or lev bitartrate).

Actual treatment and dosage should depend on the seve clinical situation and the judgment and experience of the physician.

The oral/LD$_{50}$'s in mice and rats range from 415 to 74 and from 560 to 810 mg/kg, respectively. The intravenous these species were 60 and 38 mg/kg, respectively. The ora dogs is considered to be in excess of 50 mg/kg, while leth seen in monkeys at 360 mg/kg. The toxic dose in man is no but blood levels in excess of 800 ng/ml have not been as with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atheroscler nary Artery Disease or Angina Pectoris at Rest Due t nary Artery Spasm. Dosage must be adjusted to each needs. Starting with 30 mg four times daily, before mea bedtime, dosage should be increased gradually (given i doses three or four times daily) at one- to two-day interv optimum response is obtained. Although individual patie respond to any dosage level, the average optimum dosag appears to be 180 to 240 mg/day. There are no available data ing dosage requirements in patients with impaired renal or function. If the drug must be used in such patients, titration s carried out with particular caution.

Concomitant Use With Other Antianginal Agents

1. **Sublingual NTG** may be taken as required to ab anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy** — CARDIZEM may b coadministered with short- and long-acting nitrates b have been no controlled studies to evaluate the an effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 10 0088-1771-47) and in Unit Dose Identification Paks of 0088-1771-49). Each green tablet is engraved with MARION side and 1771 engraved on the other. CARDIZEM 60-mg tablets are supplied in bottles of 100 (NDC 0088-1772-47 an Dose Identification Paks of 100 (NDC 0088-1772-49). Eac tablet is engraved with MARION on one side and 1772 on t

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Pheochromocytoma, Renal Artery Stenosis, and Lymphocytic Lymphoma Associated with von Recklinghausen's Neurofibromatosis

Case Report and Literature Review

ALAN F. KREMEN, M.D., Ph.D.;* EARL HILL, M.D.;* and ARNOLD J. KREMEN, M.D., Ph.D.*

This expanded case report discusses the spectrum of neuroectodermal and mesodermal pathology that occurs with neurofibromatosis. It stresses importance of evaluating these patients for curable causes of hypertension.

A 56-YEAR-OLD man was admitted to Intensive Care with severe paroxysmal hypertension.

The patient had a history of hypertension since his 20s. He underwent a renal artery bypass 19 years prior to admission for right renal artery stenosis secondary to fibromuscular dysplasia. In the ensuing years, he was noted to have intermittent hypertension thought to be essential. An IVP was performed two years prior to admission as part of evaluation of obstructive uropathy. At that time a left adrenal mass was seen; the patient underwent an uneventful transurethral resection of the prostate for benign prostatic hypertrophy. A followup postoperative ultrasound examination of the left adrenal that year was interpreted as demonstrating a pseudo-tumor in this location, an artifact due to gas in the stomach. Two months and again one month prior to admission, CT scans of the abdomen were performed for evaluation of an abdominal mass which was producing recurrent mechanical small bowel obstruction. The patient had a known history of well differentiated lymphocytic lymphoma, and in the past had three laparotomies for relief of bowel obstruction caused by a mass of lymphomatous tissue at the base of the small bowel mesentery. In addition to the mass in the mesentery, the CT scans demonstrated a left adrenal mass measuring 6 × 5 × 5 cm. (Figure 1); the right adrenal was normal. The adrenal mass was interpreted as extension of the adjacent lymphoma. One month prior to admission, a gastrojejunostomy was carried out for recurrent upper small bowel obstruction. Preoperatively, the patient's blood pressure had varied between 150 — 180/90 mm Hg. controlled with Dyazide and Lopressor. Postoperatively, the antihypertensive medication was resumed, and the blood pressure remained in this range until day 7, when he was noted to have orthostatic hypotension with a blood pressure of 84/50 mm. Hg. on standing. On postoperative day 14 his blood pressure was 250/120 mm. Hg. supine and 70/36 mm. Hg. sitting. He was transferred to Intensive Care. A Swan-Ganz catheter was placed. This showed a pulmonary artery wedge pressure of 4 mm. Hg. He developed ventricular tachycardia; this treated with intravenous Lidocaine and potassium. His blood pressure then fluctuated erratically between severe hyper- and hypotension. Fluid volume was repleted with normal saline, and an antihypertensive regimen was instituted consisting of intravenous sodium Nipride and Regitine (5 mg.). Following initial control of the blood pressure, the patient was started on an oral antihypertensive program consisting of the following: Lopressor 100 mg. b.i.d., Hydrazaline 25 mg. b.i.d., and Phenoxybenzamine 40 mg. b.i.d. The dosage of these medications was slowly reduced as sustained control of the blood pressure was attained.

The patient was known to have von Recklinghausen's disease with multiple cutaneous neurofibromatoma and cafe au lait spots present since early in life. He had a right upper pulmonary lobectomy for well-differentiated lymphocytic lymphoma 11 years earlier, as well as multiple laparotomies for relief of small bowel obstruction secondary to intra-abdominal lymphoma, as mentioned. One month prior to admission he had a needle biopsy of a right chest wall mass which showed recurrent lymphoma. Other surgical procedures included bilateral inguinal hernia repairs, a trans-urethral resection of the prostate for benign prostatic hypertrophy. He was known to have an ulcer diathesis; he had an acute upper GI hemorrhage three years previously, and since then had taken cimatidine. He smoked one-half to one pack of cigarettes

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daily for 30 years, and drank alcohol in moderation. He was employed as a clerical worker for a railroad. Two of his siblings were known to be hypertensive.

On exam the patient appeared anxious, cachectic, and diaphoretic. He had cutaneous neurofibromata and cafe au lait spots predominantly over his trunk, shoulders, head and neck. Thyroid was normal. There was no cervical adenopathy. Chest and heart were unremarkable. The abdomen had multiple surgical scars and a large mildly tender mass occupying the majority of the left upper quadrant. Extremities showed neurofibromata and normal pulses.

Urine catecholamines were 4850 ng/24 hours (normal 1-120 ng/24 hours). Vanylmandelic acid (VMA) was 76.8 mg/24 hours (normal 0-9.0 mg/24 hours). Urine metanephrine was 44 mg/24 hours (normal 0-1 mg/24 hours). Serum calcium was 7.8 mg/dl, T3 and T4, CBC and creatinine were normal. Serum calcitonin was .084-.105 pg/ml (normal less than 250 pg/ml). Serum gastrin was 215 pg/ml (normal 0-300 pg/ml). Pentagastrin stimulated calcitonin was subsequently determined and it too was normal.

After a period of 10 days of blood pressure control and nutritional support following admission to Intensive Care the patient was taken to surgery. At this time, his blood pressure was 126/76 mm. Hg. supine and 88/58 mm. Hg. sitting. His antihypertensive regimen consisted of Phenoxybenzamine 20 mg. daily and Lopressor 50 mg. t.i.d. With the induction of anesthesia, the patient became severely hypertensive with a systolic pressure of 250 mm. Hg. Control of the blood pressure was attained with Nipride supplemented by Inderal 1.5 mg. and Regitine 2.5 mg. intravenously. A left adrenalectomy was performed. As soon as the vascular supply to the adrenal was taken, the blood pressure dropped to 130/60 mm. Hg. at which white time the Nipride was no longer required for blood pressure control and was stopped. Postoperatively the patient made an uneventful recovery. Initial orthostatic changes in his blood pressure resolved with continuous ambulation. Antihypertensive medications were discontinued. He was normotensive at the time of discharge.

Gross examination of the adrenal showed a soft encapsulated mass measuring 6 × 4 × 5 cm. The capsule of the mass was pink, surrounded by a small amount of fatty tissue. There was no capsular invasion by adrenal cells. Microscopic examination confirmed the clinical and laboratory diagnosis of pheochromocytoma.

Discussion

The association of pheochromocytoma with neurofibromatosis is well documented.[4,5,6,7] The incidence of pheochromocytoma in patients with neurofibromatosis has been shown to be 1-3%.[7] However, in patients with neurofibromatosis and hypertension the presence of pheochromocytoma is very much higher. Kalff reported 10 to 18 patients with neurofibromatosis and concurrent hypertension had pheochromocytomas.[6]

Pheochromocytoma is a rare tumor. It characteristically causes hypertension, either episodic or sustained, approximately 40% of patients present, as this patient did, with paroxysmal hypertension[1,2] Often the diagnosis is not made until a hypertensive crisis occurs, as was the case with this patient. These crises can be fatal as is demonstrated by Sutton's review of 54 autopsy cases of pheochromocytoma.[3] Pheochromocytoma may be seen in association with a variety of other medical conditions, these can serve to raise the clinician's index of suspicion about the possible presence of pheochromocytoma and other associated medical conditions. These conditions include the multiple endocrine adenomatosis syndromes (MEA: medullary carcinoma of the thyroid, parathyroid chief cell hyperplasia, Zollinger-Ellison syndrome, and pituitary adenomas) and von Recklinghausen's neurofibromatosis. Workup of this patient and his family was negative for the MEA syndromes.

Also well-documented is the association of neurofibromatosis and renal artery stenosis as a cause of hypertension. Neurofibromatosis describes a group of patients with a spectrum of neuro-ectodermal dysplasis of which pheochromocytomas are a part, but in addition, a variety of mesodermal and vascular lesions may be present, including renal artery stenosis, coarctation of the aorta, as well as mesenteric and renal artery aneurysms.[8] The association of neurofibromatosis and renal artery stenosis was first described by Reubi in 1945,[9] and has been well-documented since.[10-12] The association is particularly high in young patients with neurofibromatosis who are hypertensive, [13-15] as occurred with this patient in his 20s.

This case presents the unusual circumstance of the occurrence of both pheochromocytoma and renal artery stenosis as causes of hypertension in a patient with neurofibromatosis. This has been reported only once in the literature before.[16] Moreover the association of neurofibromatosis, pheochromocytoma, renal artery stenosis, and lymphoma in this patient is unique, never having been previously reported in the literature, although a very wide spectrum of neuroectodermal and mesodermal abnormalities have been reported in association with neurofibromatosis.[8]

This case emphasizes that it is important to maintain an appropriate index in suspicion for curable causes of hypertension when treating patients with neurofibromatosis, and underscores the danger of assuming that elevated blood pressure is due to essential hypertension. Renal artery lesions most commonly cause hypertension in young patients with neurofibromatosis; pheochromocytoma is most likely the cause in older patients. Though pheochromocytoma is rare, unrecognized and untreated, it can produce severe even fatal hypertension. Accurate biochemical diagnosis and effective localization studies are available. Surgical therapy for pheochromocytoma in appropriately prepared patients can be carried out safely and with the expectation of cure.

Summary

A unique case of pheochromocytoma, renal artery stenosis, and lymphocytic lymphoma in a patient with von Recklinghausen's neurofibromatosis is presented. The patient presented with paroxysmal fluctuation between hyper- and hypotension following a surgical procedure. The patient's clinical course is discussed, and the association of neurofibromatosis with pheochromocytoma, renal artery stenosis, and lymphoma is reviewed. Renal artery stenosis is the most common cause of hypertension in young patients with neurofibromatosis; pheochromocytoma is the most common cause of hypertension in older patients with this condition. The occurrence of both these curable causes of hypertension in a patient with neurofibromatosis has been reported only once previously, and never before in association with lymphoma. This case emphasizes the spectrum of neuroectodermal and mesodermal pathology that occurs with neurofibromatosis, and further stresses the importance of evaluation of patients with neurofibromatosis for curable causes of hypertension.

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Conferences at Children's Hospital of St. Paul

February 14, "Update on Aminoglycosides", Raymond Adelman, M.D., department of pediatrics, Sacramento Medical Center, California.

February 21, "Immune Neutropenia", James Hocks, M.D., pediatrician, St. Paul and John Priest, M.D., pediatric hematologist/oncologist, Children's Hospital of St. Paul.

February 28, "Splenectomy: Indications and Hazards", William Krivit, M.D., professor and head, department of pediatrics, University of Minnesota.

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Treatment of Decubitus Ulcers

A New Approach

JESSE J. BARRON, M.D.,* WYMAN E. JACOBSON, M.D.,† and GREG TIDD‡

Chronic decubitus ulcers in six geriatric patients, confined to a long-term Health Care facility, had failed to respond to prior conventional therapy. These ulcers had been treated for one to eleven months with no improvement or only slight improvement. Micro-Electro Medical Stimulation (MEMS) was used in a prospective project as an adjunct to pre-existing treatment. The MEMS was administered percutaneously using a pair of Probes, placed circumferentially around the ulcer. Each ulcer was treated three times a week for three weeks.

The depth of tissue penetration by the ulcers was graded on a numeric scale. The surface area of the ulcer was measured and recorded in square centimeters. All data were collected and recorded before the use of MEMS and after two, four, six and eight treatments with MEMS. A follow-up examination was made on all patients 7 days after the ninth and final treatment with MEMS.

Two of the ulcers had healed before the end of the third week and remained healed at the follow-up examination. Seven days after the 9th treatment with Micro-Electro Medical Stimulation the total surface area of the decubitus ulcers for an additional three patients had decreased by more than 99%. The surface area of the ulcer in the remaining patient decreased in size by 55% after the 9th treatment with MEMS.

Analysis of the data, using the Two-Way Analysis of The Variance, revealed the differences between the baseline data and the 5 treatment levels with MEMS to be highly significant.

DECUBITUS ULCERS have become a progressively greater problem due in a large measure to the increasing population in long-term Health Care facilities and Rehabilitation Centers. Even under ideal conditions, the prevention of decubitus ulcers and other ischemic pressure sores is not always possible. The multiple factors involved in the development of these ulcers[1] are common to the patients in long-term and rehabilitation facilities.

The primary factor related to the etiology of decubitus ulcers is prolonged or recurrent pressure upon the skin and subcutaneous tissues. However, there are other contributing factors, including chronic weight loss, generalized arteriosclerosis, neuromuscular diseases, dependent edema, protein & vitamin deficiencies and numerous metabolic diseases.

The most common locations for decubitus ulcers are over bony prominences. The word 'decubitus'

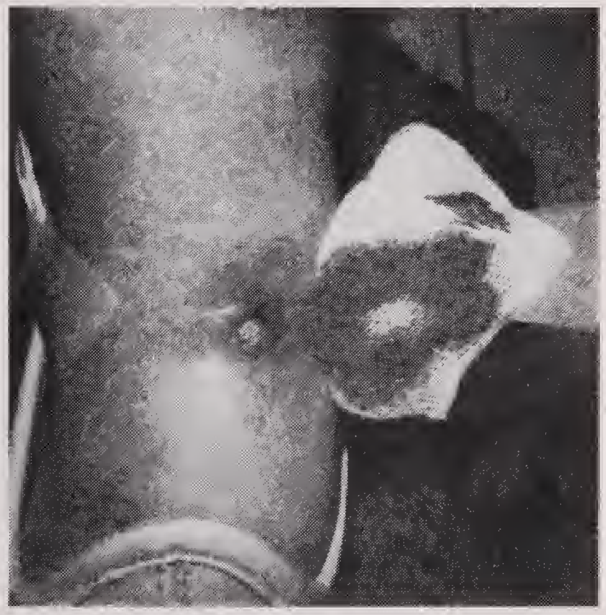

Figure-Photograph to show the 'punched out' nature of the ulcer. This ulcer was healed at follow-up.

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refers to 'lying down' and suggests that the ulcers occur only in bed-ridden patients. However, they are more common in patients chronically dependent upon a wheel chair. *Decubitus ulcers* is a generic designation only.

Treatment programs for decubitus ulcer are often very demanding on the medical, nursing and other staff personnel; expensive;[2] and frustrating for patient and family. This prospective study project was developed to investigate the use of Micro-Electro Medical Stimulation (MEMS) for the adjunctive treatment of decubitus ulcers in geriatric patients confined to a long-term Health Care facility.

Material and Methods

The Project Sample

All of the subjects in this study were confined to a local Nursing Home. The patients were under the private care of the Project Director (JJB) or assigned to his care, by other physicians, during the course of the project. The study was conducted during March-April, 1984.

The project sample consisted of six patients, three males and three females, with a mean age of 80.5 years. On a five point scale for physical activity the mean score for the group was 3.0 (5 = totally inactive). Also, on a five point scale for the mental status the mean score for the group was 2.3 (5 = totally disoriented).

The ulcers in these patients were chronic; present for more than one month and having shown little or no improvement during prior treatments. On a five point scale for prior improvement the mean score for the group was 4.0 (5 = no improvement). The mean duration of the ulcers for the group was 13.5 weeks.

Two of the ulcers were on the ankle, one on the dorsum of the foot, one on the thigh, one on the buttocks and one over the coccyx. Edema in or around the ulcers was only slight or moderate. Infection in the ulcers was not a significant complication at the time this study project was initiated. The significant characteristics of the *Project Sample* are summarized in Table 1.

All of the ulcers involved the skin and fatty tissue and one extended into muscle tissue. None apparently extended to the underlying bone. Most of the ulcers were elliptical or circular in shape and tended to have a 'punched-out' appearance (Figure).

Description of the Instrument

The MEMS Instrument is a highly sophisticated device that delivers a very low electric energy. This form of electro-therapy is non-galvanic and the energy flow is delivered through electronically controlled waveforms. The electro-physical parameters and other specifications are as follows:

1. The quantity of electro-energy is restricted to micro-amperes with a range of 20μA to 600μA.

2. The Electromotive force (EMF) is either 40V or 50V, with a tolerance of + or − 5%.

3. The Frequency is adjustable from 0.3 to 990 Hz.; however, for our clinical use it was limited to a range of 0.5 to 5.0 Hz.

4. The maximum power output from the MEMS instrument is 0.03W (600μA × 50V). Even this maximum power was non-tetanic and non-painful. A mild "tingling sensation" was occasionally perceptible when this output was tested on a small group of normal volunteers.

5. The waveform is biphasic square or 'modified' biphasic square and the latter form is almost always used. For an occasional subject having a high tissue resistance the biphasic square wave and a negative polarity is used to initiate the treatment. There are no Spikes, no Bursts of energy flow and no Roll-overs in the waveforms. The absence of these features eliminated (a) pain; (b) erratic energy flow and (c) measurable heat production. The waveforms were inspected and evaluated using an oscilloscope. These tests were made using various combinations of the electro-physical parameters.

6. The pathway for the MEMS energy flow

TABLE 1

Characteristics of the Project Sample for the Evaluation of Micro-Electro Medical Stimulation for Decubitus Ulcers.

Case No.	Sex	Age	Mental Status	Physical Status	Ulcer Site	Ulcer Duration	Prior Response
1.	F	84	5	5	Coccyx	50 wks.	5
2.	M	83	2	1	Ankle	8 wks.	4
3.	M	56	2	3	Thigh	4 wks.	4
4.	F	96	3	2	Foot	4 wks.	4
5.	F	90	1	2	Ankle	8 wks.	4
6.	M	74	1	5	Buttocks	7 wks	3
Totals		483	14	18		81 wks	24
Means		80.5	2.3	3.0		13.5	4.0

through tissue is approximately 2 centimeters wide. In accordance with the principles of electro-physics the energy flow follows the *Line of Least Resistance*. Damaged cells offer less resistance to an electro-energy flow than normal cells.[3]

7. The probes used with the instrument are non-invasive. A disposable tip is dampened with a conductive fluid or jel and then placed on the non-ulcerated skin. An On-Switch is included in the handle of the positive probe but the treatment time is automatically terminated by the pre-set timer-dial on the instrument panel.

Basis for this Project

General Considerations

The MEMS instrument, as described above, represents a new concept in Electro-medical devices. The decision to evaluate this modality on skin ulcers was based on: (a) proven chemical endergonic reactions for cell metabolism; (b) the established existence and measured electric force involved in cell work (as expressed in joules); (c) the importance of the cell membrane EMF (measured in millivolts); and (d) limited publications relating to the effects of an external electric current on cell chemistry and cell replication.

Normal Cell Replacement

The cells of the skin have a high rate of multiplication and replacement. The cells on the adult human forearm are reported to have an average life-span of 12 to 15 days.[3,4]

The average life-span for the cells lining the inner wall of the stomach is three to five days. However, the average life-span of the red blood cells is about 120 days and for liver cells about 18 months.[3]

Source of Internal Cell Energy

The energy required for replication and metabolism of an individual cell is small. Glucose is the most important fuel for the cells. The pathways for carbohydrate metabolism include the chemical reactions that provide an efficient and abundant source of energy for the cells. On entering the cell, glucose is immediately phosphorylated by ATP (adenosine triphosphate) in the presence of hexokinase and Mg++. Thus, the cell must have stored reserve of ATP for energy consumption.

The following is only intended to highlight the great importance of the ATP < --> ADP + P^i reaction for cell life. One mole of glucose metabolized via the tricarboxylic (TCA) cycle or 'Krebs Cycle' yields a total of 38 moles of ATP. One mole of glucose metabolized via anerobic glycolysis (The Embden-Myerhof Cycle) yields two moles of ATP.

ATP is the highest energy producing substance for the cell and is immediately available for the complex endergonic processes of the cells, as established by the genetic code and the RNA structure.

For "conventional electric currents" (and many pre-existing electro-therapy devices) the effects are due to the conversion of the electric energy into radiant energy (light), heat energy and electromagnetic force. For the MEMS instrument the primary and only measurable effect of the electric power is related to its conversion to chemical reactions.

Magnitude of Energy Use by Cells

The energy required for replication and metabolism of an individual cell is relatively small in amount but actually large in terms of cell size. The combined energy consumed and stored by the entire cell mass of the human body is enormous. It has been estimated that there are an average of 60,000 BILLION cells in the adult human body. Two billion new red blood cells are produced each day.

Electric Current and ATP Production

An extensive study by N Cheng, et al. at the University of Louvain, Belgium. Departments of Biochemistry and Orthopaedic Surgery involved the use of direct electric currents ranging from 10μA to 1000μA on the skin cells of rats. They demonstrated significant increases in ATP generation and concentration in the rat skin tissue. Also, the micro-currents stimulated amino acid incorporation into the protein of the skin tissue.[5]

TABLE 2
Surface Area of Decubitus Ulcers (Sq. cms.)

Case No.	Base Line	After 2 RX	After 4 RX	After 6 RX	After 8 RX	After 9 RX
1.	7.60	1.58	1.11	0.63	0.37	0.04
2.	6.33	4.43	3.88	3.80	2.61	2.85
3.	7.61	3.80	1.27	0.95	0.00	0.00
4.	1.98	0.89	0.55	0.55	0.40	0.08
5.	1.94	1.27	0.79	0.00	0.00	0.00
6.	5.05	0.71	0.47	0.47	0.47	0.02
Total	30.51	12.68	8.07	6.40	3.85	2.99
Means	5.09	2.11	1.35	1.07	0.64	0.49

Wound Healing and Electric Energy

O.M. Alvarez, et el. at the University of Pennsylvania studied the effect of a small current on the healing time of skin wounds produced in pigs. The treatments involved: (a) uncovered wounds; (b) wounds covered with a silver impregnated dressing; and (c) wounds covered with a silver impregnated dressing through which a micro-current was transmitted. The average healing time for the wounds that included treatments with an electric current was 30% to 36% less than for the two control groups.[6]

Treatment Design

Treatments with MEMS were administrated three times a week for three weeks. The micro-electro energy force was administered percutaneously across the surface of the ulcer, using probe electrodes. Each pair of probes was placed 2 cms distant from the prior placement and then moved circumferentially until an Effective Treatment had been delivered across the entire surface. Each probe was placed 2 cms. from the edge of the ulcer.

For the treatment of decubitus ulcers in this study the energy was generated by using 600µA, 50V, and 0.5Hz. The ‘modified’ biphasic square wave was used. These characteristics achieved the Effective Treatment and preserved the desired waveform. Minor variations of these parameters were rare. However, the capability to individualize the energy and tissue uptake was an important aspect of the MEMS treatments.

Data Collection

The cross-sectional measurements (in mm) of the ulcer surface were recorded and the shape was decribed. The measurements and shape were recorded on a scaled grid.

The surface area (in square centimeters) was calculated from the data sheets.

The above measurements and data were collected before the first treatment with MEMS and at regular intervals during the course of treatments. A final data collection was made one week after the 9th treatment.

Results

One ulcer was healed after six treatments and another after eight treatments. Both remained healed. Three additional ulcers were essentially healed at the time of the final follow-up examination. For one of the ulcers the response was less dramatic; but, it decreased 55% in surface area after nine treatments (Table 2).

The Two-Way Analysis of the Variance was used as the statistical method for the data analysis. The difference between The Means for the Baseline and Treatment Data (The Columns) were highly significant at a 99.0% Confidence Level. The Means for the Data for the Individual Ulcer Responses (The Rows) were equal. (No significant difference for individual responses).

Comments and Summary

The complete healing or marked decrease in the ulcers in this project during treatments with MEMS was in sharp contrast to their prior indolence. In one patient the ulcer had been resistance to treatment for almost a year. The area of this ulcer was reduced by more than 95% after 9 treatments with MEMS. The ‘‘normal time’’ required for healing of decubitus ulcers limited to the skin and fatty tissue, as reported in one study, was two to three months.[7]

Five of the six ulcers treated with MEMS were healed or essentially healed in one month. On the basis of the results from this study the adjunctive use of Micro-Electro Medical Stimulation proved to be a safe, effective and cost-efficient treatment for chronic decubitus ulcers.

The total electro-physical effects of Micro-Electro Medical Stimulation on human cells are unknown. There has been some evidence that there is an increased generation of intra-cellular ATP and an accelerated conversion of amino acids to cell proteins.[5]

In the cells of the elderly there is an increase in Mg^{++} and Zn^{++}.[8] These are essential for rapid bacterial growth and may explain the increased tendency for wound infections in older persons. A micro-electro energy could reduce the concentration of these anions by a process of ‘electrolysis’. There are other important factors to consider, such as a failure of the ‘‘calcium pump mechanism,’’ which might produce toxic levels of intra-cellular levels of this anion.

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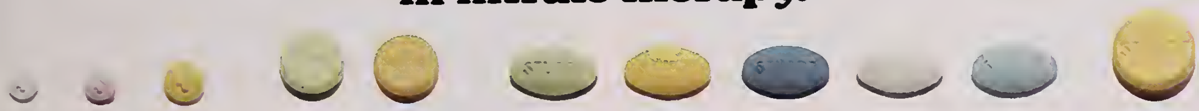

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INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris. All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin.

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks. Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis.

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established. If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension.

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE. The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg, below 90 mmHg). Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy.

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary.

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur. Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory. The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined. However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals. On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months.

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers. In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal. The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known. However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly.

Information for Patients: Headache may occur during initial therapy with SORBITRATE. Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use.

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates.

Isosorbide dinitrate acts directly on vascular smooth muscle, therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug. A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet.

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose. There are no adequate and well-controlled studies in pregnant women. SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established.

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related. In clinical trials at various doses, the following have been observed.

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent. Cutaneous vasodilation with flushing may occur. Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration and collapse) may occur even with the usual therapeutic dose. Drug rash and/or exfoliative dermatitis may occasionally occur. Nausea and vomiting appear to be uncommon. Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates. The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg.

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose. In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure.

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours. Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported.

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended. The extent to which development of tolerance should modify the dosage program has not been defined. *The oral controlled-release forms of isosorbide dinitrate should not be chewed.*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg), Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg), Sustained Action Tablets (40 mg)

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Importance of Proper Radiography in Acute Shoulder Trauma

EDWARD V. CRAIG, M.D.*

A case of missed posterior fracture dislocation leading to severe degenerative arthritis is used to underscore the importance of insisting on adequate AP, lateral and axillary view x-rays for the proper interpretation and treatment of acute shoulder trauma. These x-rays are possible with the patient sitting, standing, and supine; and can be done with the arm in or out of the sling.

FRACTURES OF THE proximal humerus comprise about 5% of all fractures. Proper treatment of these fractures depends upon accurate identification of each fracture fragment and an understanding of the muscle forces acting on the fracture fragments.[1] In 1970, Neer proposed a 4 segment classification of shoulder fractures and dislocations and outlined the treatment plan based on the displacement of the fracture fragments, which include one or more of the greater tuberosity, lesser tuberosity, humeral articular surface, and humeral shaft.[2]

Accurate assessment of fractures and fracture dislocation is impossible on clinical grounds alone. The diagnosis therefore depends on precise x-ray interpretation, a fundamental, yet too frequently overlooked principle of fracture care. This of necessity requires good quality x-rays in at least 2 planes perpendicular to the fracture site.

The potentially disastrous consequences of initiating definitive treatment based on inadequate x-ray evaluation or inaccurate interpretation is illustrated by the following case.

Illustrative Case

A fifty-five year old female was skiing when she fell and suffered closed trauma to her left shoulder.

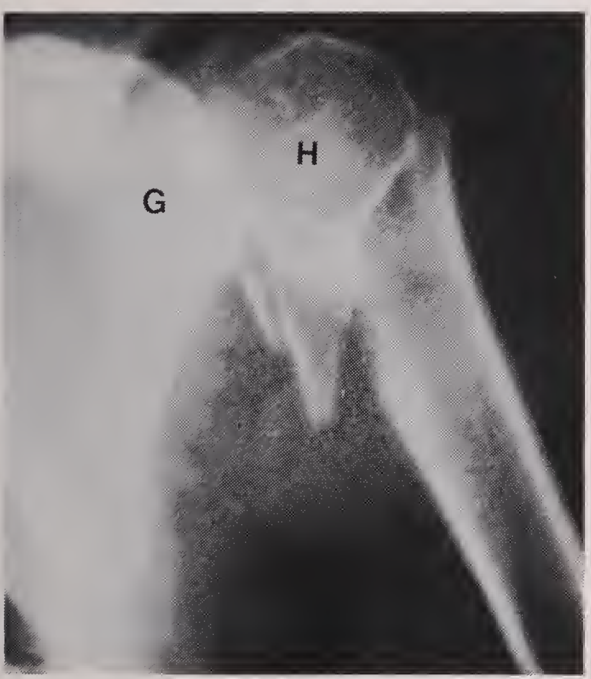

Fig. 1 — Initial AP of left shoulder interpreted as minimally displaced surgical neck fracture.

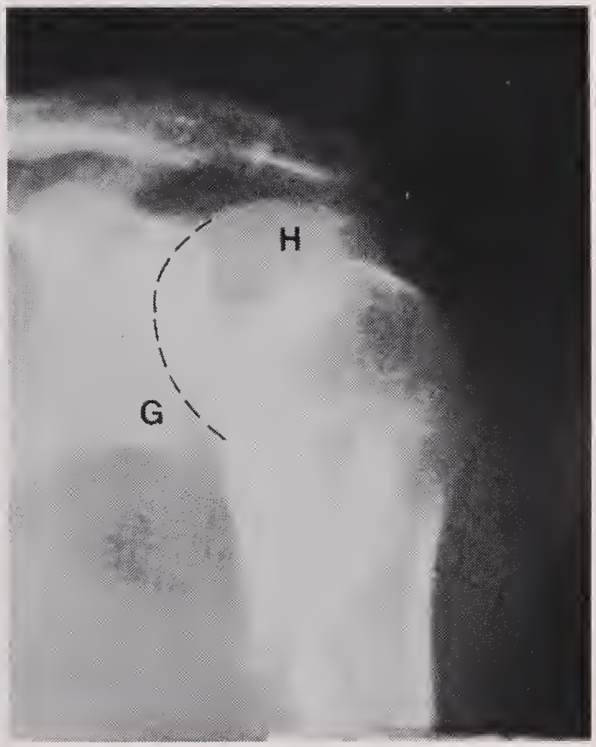

Fig. 2 — True AP through the glenohumeral joint six months later, showing overlap of the humeral head with the glenoid.

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*Assistant Professor, Department of Orthopaedic Surgery, University of Minnesota, Minneapolis, Minnesota.

Initial clinical examination showed a shoulder that had relatively normal alignment, motion which was limited by pain, and ecchymosis. The neurovascular status was unremarkable. An initial AP of the injured shoulder was interpreted as showing minimally displaced surgical neck fracture of the humerus (Figure 1).

The patient was immobilized and over the next several months had continued pain with loss of motion despite apparent fracture healing. After six months the patient was referred for further treatment. A repeat set of Xrays was obtained and a true AP of the glenohumeral joint (Figure 2) showed a slight overlap of the humeral head and the glenoid. A lateral view in the plane of the scapula showed what appeared to be a healed posterior fracture dislocation (Figure 3). Axillary view confirmed the fixed posterior fracture dislocation with an impression fracture of the humeral head (Figure 4). Because of the long standing dislocation there were marked degenerative arthritic changes in the humerus and glenoid, and it was necessary to perform a total shoulder replacement.

Discussion

Adequate Xrays in at least two perpendicular planes are essential for the correct interpretation and proper treatment of proximal humerus fractures. The clinician may be mislead in fractures and fracture

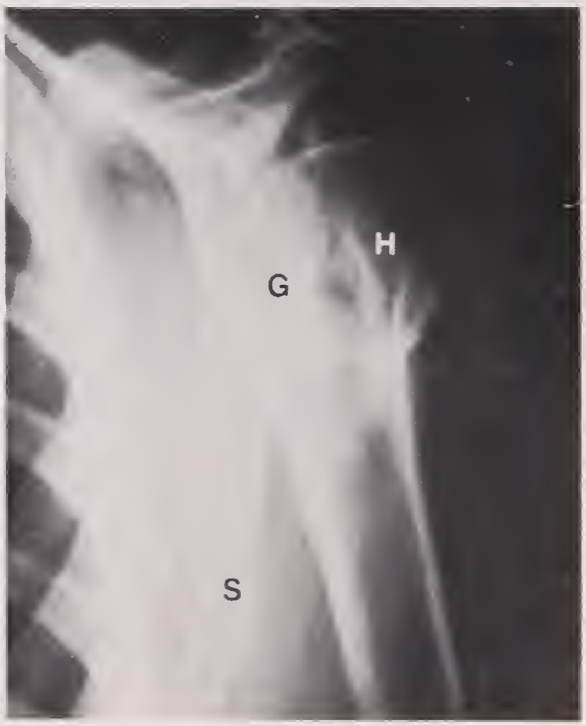

Fig. 3 — Lateral in the plane of the scapula shows the humeral head to be dislocated posteriorly.

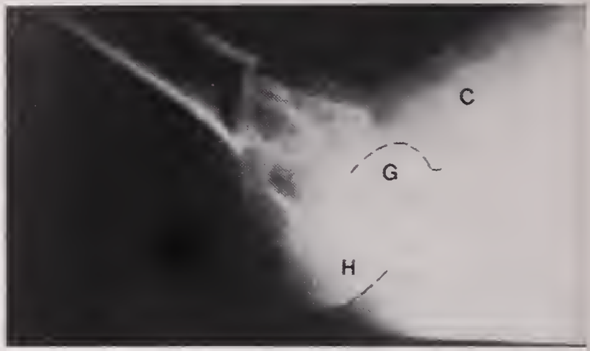

Fig. 4 — Axillary view. The fracture is healed, but there is a fixed posterior dislocation of the humeral head. The coracoid (C), glenoid (G) and humerus (H) are illustrated.

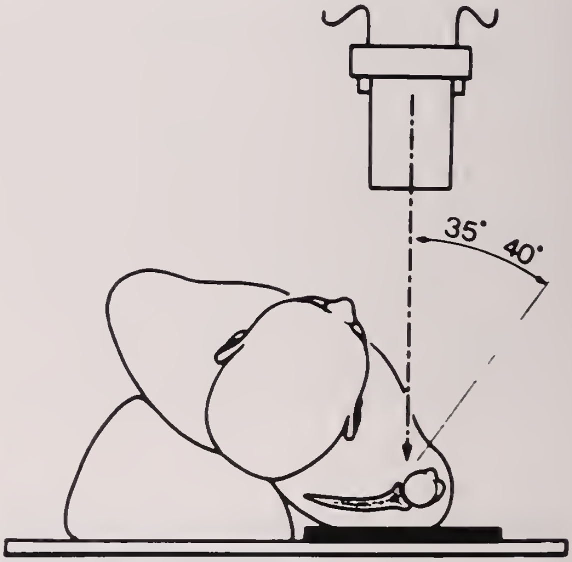

Fig. 5 — Method of obtaining true AP of the glenohumeral joint, the plane of which is actually 35 degrees to 40 degrees oblique from the AP of the thorax.

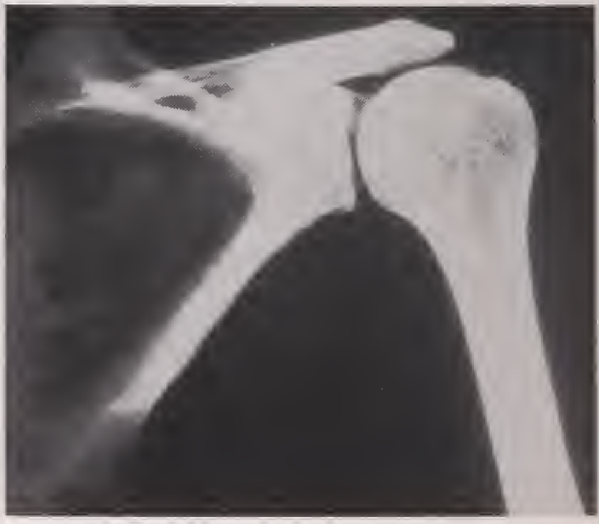

Fig. 6 — In true AP of glenohumeral joint, no overlap of humeral head and glenoid exists.

dislocations because what may appear to be normal glenohumeral motion may in fact be occurring through the fracture site rather than the glenohumeral joint. The posterior fracture dislocation is a well-known diagnostic pitfall. Fifty percent of these are missed on initial examination.[1]

The trauma series has been an extremely reliable method of obtaining adequate Xrays in all acute shoulder trauma. This consists of a true AP of the glenohumeral joint, the plane of which is actually perpendicular to the scapula rather than the chest (Figure 5). This shows the true glenohumeral joint space (Figure 6). The lateral is made parallel to the plane of the scapula (Figure 7), and shows the humeral head centered in a triangle formed by the coracoid process anteriorly, the acromion process posteriorly, and the body of the scapular inferiorly (Figure 8). Both of these views can be taken with the patient standing, sitting, or supine, and can be taken with the arm in or out of the sling. Thus they are ideal and essential in the initial evaluation of shoulder trauma. The axillary view can be an invaluably informative addition and can also be done with the

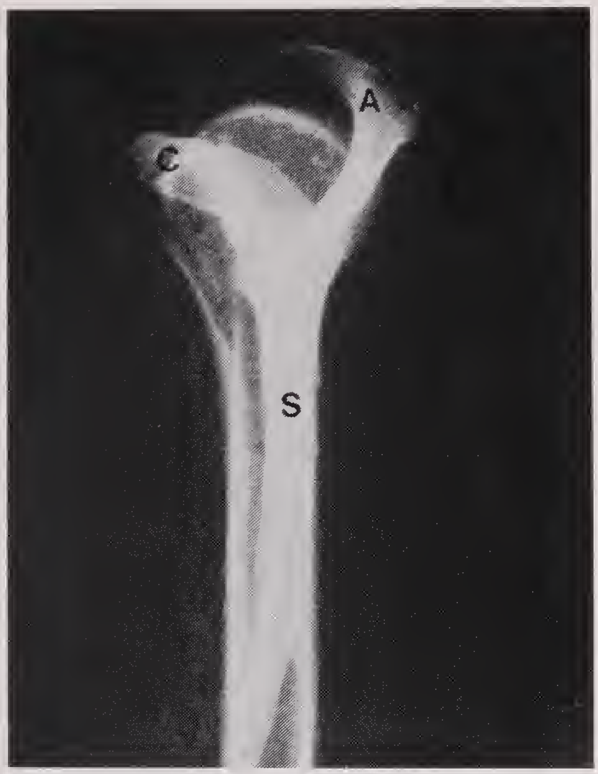

Fig. 8 — True lateral of glenohumeral joint with the humeral head centered in a triangle formed by acromion (A), coracoid (C), and body of scapula (S).

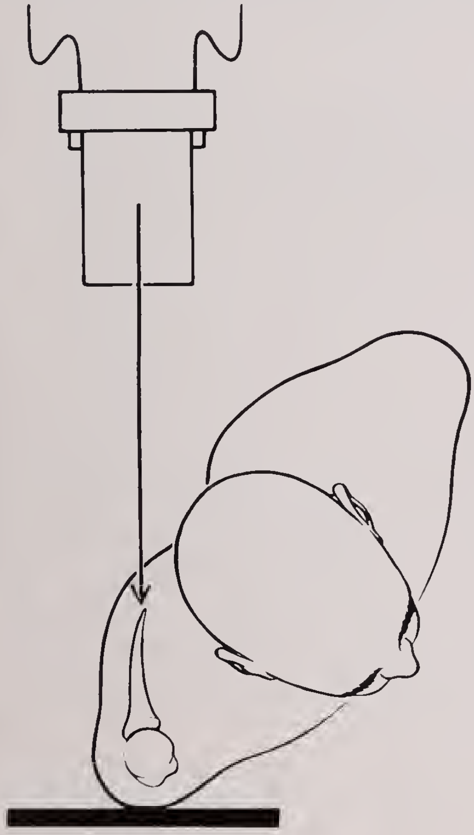

Fig. 7 — Method of obtaining true lateral of the glenohumeral joint. The beam is parallel to the plane of the scapula.

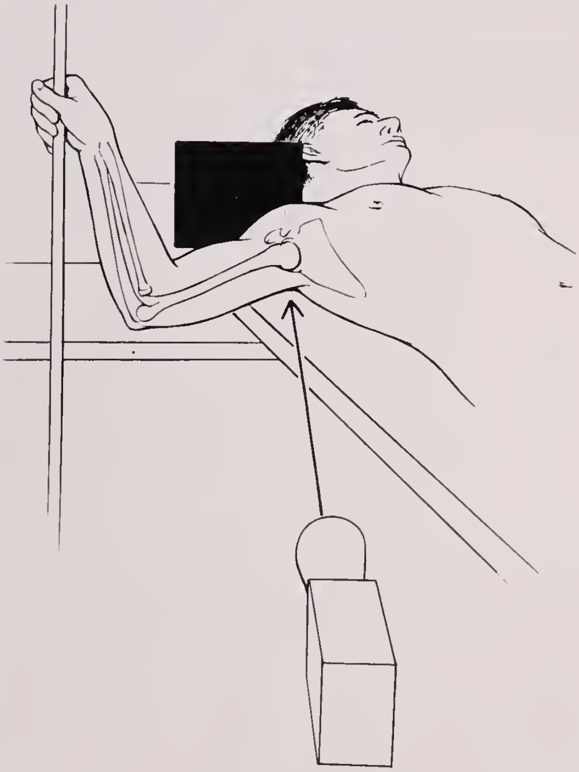

Fig. 9 — Method of obtaining axillary view. This can be obtained with minimal abduction of the affected shoulder.

patient standing, sitting, prone or supine. This is done with the beam angled cephalad and the cassette on the superior aspect of the shoulder (Figure 9). The cassette is positioned against the neck and the head is turned away from the affected shoulder. In this view the humeral head is seen as it articulates against the glenoid with the coracoid process anteriorly and the acromion posteriorly (Figure 10). Minimal abduction, often requiring the presence of the physician to help support the arm, is needed for this view. This in fact is often the only view which may correctly show the position of the humeral head in an anterior or posterior fracture dislocation and may show the position of tuberosities which have been retracted by pull of rotator cuff tendons.

It is hoped that the insistence of the treating physician on Xrays of good quality in at least two perpendicular planes will lessen the likelihood that severe trauma will be overlooked or misinterpreted. Accurate identification of the pathology is an important first step in proper management of these difficult fractures.

Summary

1. A case of a missed posterior fracture dislocation is described.
2. The proper method of obtaining an accurate AP, lateral and axillary view in acute trauma is reviewed.
3. Insistence on good quality Xrays in at least two planes perpendicular to the fracture is essential in proper treatment in all acute shoulder trauma.

Acknowledgment

The author gratefully acknowledges the contribution of Charles Neer, who supplied the diagrams reproduced in the manuscript and with whose permission they are reprinted.

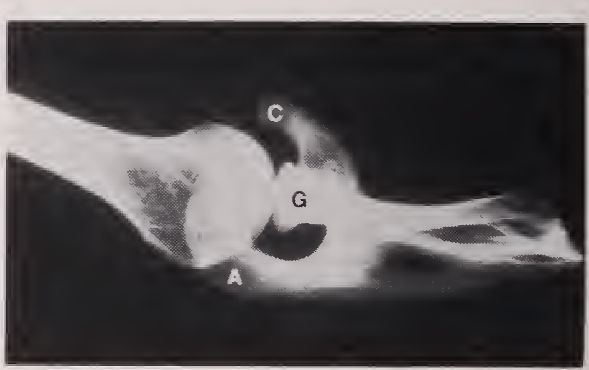

Fig. 10 — Axillary view shows coracoid anterior (C), acromion posterior (A), and humeral head articulating with glenoid.

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Cover Photo
"Spruce Creek"

Dr. Richard N. Hadley, orthopedist at the Park-Nicollet Clinic, Minneapolis, and on the attending staff at Gillette Hospital, has another of his photographs on the cover of MINNESOTA MEDICINE.

Spruce Creek is north of Lutsen on the North Shore. Dr. Hadley and his family spend many weeks at a cabin in this area, and during this time Dr. Hadley is busy with his camera taking nature shots of that area.

He used a Olympus OM4 camera with Kodachrome 64 film for this shot. Shutter speed was a 30th of a second.

MMIE Malpractice Claim Review

Orthopedic Surgery

MMIE Risk Management Committee
Frank E. Johnson, M.D.
Chairman

Allegations

Negligent performance of a lumbar laminectomy. Negligent failure to evaluate, diagnose and treat plaintiff's subsequent and persistent low back pain.

Facts of Case

The patient, a 38-year-old woman, was admitted to a local hospital by Dr. X on April 13 for a lumbar myelogram and discogram following a course of conservative treatment for low back pain. The myelogram showed some asymmetry of the nerve sleeves at the lumbosacral level and a probable, small arachnoidal cyst on the left, but no apparent protrusion of the intervertebral disc. In the body of the discogram report the L3—L4 and L4—L5 levels were reported as normal; however, at the L5—S1 level, the radiologist reported the disc "to be abnormal with the contrast material going far anterior into the disc with posterior extravasation in the midline. The patient had an immediate response which was characterized as being about the same as her clinical pain, only somewhat worse. The pain was in the low to mid back and radiating into the right buttock." Erroneously, the radiologist reported the following conclusion: "Abnormal disc at L4—L5 with some posterior extravasation and fairly good duplication of the patient's clinical symptoms."

On April 30, following her X-ray studies, the patient was discharged from the hospital. Dr. X's discharge summary correctly stated: "The lumbar discogram was done suggesting disrupted lumbar intervertebral disc at L5-S1."

On July 16 the patient was readmitted for further conservative therapy. During that hospitalization, it was determined that surgery was necessary. The patient was readmitted on July 30, and a lumbar laminectomy at L4—L5 was performed the following day. Dr. X had intended to do a laminectomy at the L5—S1 level, but at the time of surgery relied exclusively on the radiologist's erroneous conclusion on the discogram report and failed to read the body of the report.

Following surgery, the patient noted a slight, temporary improvement of her back pain, but within a short time, her pain returned. After the surgical error was discovered, the patient underwent a lumbar fusion from L4—S1, followed by a marked improvement in her symptoms. The patient filed a lawsuit against Dr. X but not the radiologist.

Disposition

$90,000 settlement.

Reason for Settlement

1. Dr. X admitted that it was not his intention to perform the laminectomy at the L4—L5 level but that he did so because he relied solely on the radiologist's erroneous conclusion.
2. The patient was able to demonstrate that the second surgery was necessitated by the original surgical error and that following this procedure she had a resolution of her symptoms.

Risk Management's Comments

Typographical and dictation errors do occur in the hospital and clinic setting with some degree of frequency. Usually they can be identified when the physician carefully examines the medical reports that he reviews. When such an error is discovered, immediate steps should be taken to assure that the mistake is corrected and that the proper information is entered into the patient's record.

In the interest of good patient care, it is advisable that the physician review the actual X-ray and read the entire X-ray report prior to the performance of surgery.

Management of Acute Athletic Injury

Our athletic training personnel and coaches use the following guidelines for evaluating acute athletic injury.

I. EXAM
  A. Stop — the play or action, coordinate with officials
  B. Listen — medical history, mechanism of injury, pertinent past history
  C. Look — observe before palpating (obvious deformity doesn't need manipulation for diagnosis)
  D. Feel— palpate localized tenderness, note crepitis (test stability last)
II. GUIDELINES FOR RETURN TO ACTIVITY
  Serious and disabling injury — no return
  Not serious but disabling injury (or potentially disabling injury) — no return
  Not serious, not disabling, and not potentially disabling — return to activity
  Specifically, the athlete should be:
    1. Relatively pain free
    2. Exhibit full range of motion in the spine and extremities
    3. Exhibit normal strength in the spine and extremities
    4. Display proper mental attitude
      A. Oriented, capable of reasoning, no headache
      B. Positive about returning to competition him/her self

In summary, most coaches and athletic trainers are aware of the above guidelines for returning to activity in the event of athletic injury. Let us continue to educate trainers and coaches and at the same time remind ourselves of these guidelines so that we as physicians don't compromise our judgment during the emotional "heat of competition."

John Benton, M.D.
Chairman
Resource Group on Sports Medicine

New studies uncover the potassium effects of beta-2 blockade

Clinical pharmacology data from *The New England Journal of Medicine:*

"...when normal young men are given infusions of epinephrine at levels such as those that circulate in patients with myocardial infarction, their serum potassium concentrations fall by about 0.8 [mmol] per liter. Hypokalemia is prevented by selective beta-2 blockade."[1]

Evidence that all beta blockers are not created equal.

Right from the star
in hypertension..

Once-daily INDERAL LA (propranolol HCl) for smooth blood pressure control without the potassium problems of diuretics

Once-daily INDERAL LA (propranolol HCl) avoids the risk of diuretic-induced ECG abnormalities due to hypokalemia.[2,3] In addition, INDERAL LA preserves potassium balance without additive agents or supplements while providing simple, well-tolerated therapy with broad cardiovascular benefits.

Once-daily INDERAL LA for the cardiovascular benefits of the world's leading beta blocker

Simply start with 80 mg once daily. Dosage may be increased to 120 mg to 160 mg once daily as needed to achieve additional control.

Like conventional INDERAL tablets, INDERAL LA should not be used in the presence of congestive heart failure, sinus bradycardia, heart block greater than first degree, and bronchial asthma.

For beta-1/beta-2 blockade

Once-daily

INDERAL® LA

(PROPRANOLOL HCl) LONG ACTING CAPSULES

80 mg 120 mg 160 mg

The appearance of these capsules is a registered trademark of Ayerst Laboratories.

Please see brief summary of prescribing information on the next page for further details.

Once-daily
For beta-1/beta-2 blockade INDERAL® LA
(PROPRANOLOL HCl) LONG ACTING CAPSULES

The appearance of these c
is a registered trademark
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BRIEF SUMMARY *(FOR FULL PRESCRIBING INFORMATION SEE PACKAGE CIRCULAR)*

INDERAL® LA brand of propranolol hydrochloride **(Long Acting Capsules)**

DESCRIPTION. Inderal LA is formulated to provide a sustained release of propranolol hydrochloride Inderal LA is available as 80 mg 120 mg, and 160 mg capsules

CLINICAL PHARMACOLOGY. INDERAL is a nonselective beta-adrenergic receptor blocking agent possessing no other autonomic nervous system activity It specifically competes with beta-adrenergic receptor stimulating agents for available receptor sites When access to beta-receptor sites is blocked by INDERAL, the chronotropic, inotropic, and vasodilator responses to beta-adrenergic stimulation are decreased proportionately

INDERAL LA Capsules (80, 120, and 160 mg) release propranolol HCl at a controlled and predictable rate Peak blood levels following dosing with INDERAL LA occur at about 6 hours and the apparent plasma half-life is about 10 hours When measured at steady state over a 24-hour period the areas under the propranolol plasma concentration-time curve (AUCs) for the capsules are approximately 60% to 65% of the AUCs for a comparable divided daily dose of INDERAL tablets The lower AUCs for the capsules are due to greater hepatic metabolism of propranolol, resulting from the slower rate of absorption of propranolol Over a twenty-four (24) hour period, blood levels are fairly constant for about twelve (12) hours then decline exponentially

INDERAL LA should not be considered a simple mg for mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose When changing to INDERAL LA from conventional propranolol, a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval. In most clinical settings, however, such as hypertension or angina where there is little correlation between plasma levels and clinical effect, INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate, systolic pressure and rate pressure product INDERAL LA can provide effective beta blockade for a 24-hour period

The mechanism of the antihypertensive effect of INDERAL has not been established Among the factors that may be involved in contributing to the antihypertensive action are (1) decreased cardiac output, (2) inhibition of renin release by the kidneys, and (3) diminution of tonic sympathetic nerve outflow from vasomotor centers in the brain Although total peripheral resistance may increase initially, it readjusts to or below the pretreatment level with chronic use Effects on plasma volume appear to be minor and somewhat variable INDERAL has been shown to cause a small increase in serum potassium concentration when used in the treatment of hypertensive patients

In angina pectoris, propranolol generally reduces the oxygen requirement of the heart at any given level of effort by blocking the catecholamine-induced increases in the heart rate, systolic blood pressure, and the velocity and extent of myocardial contraction Propranolol may increase oxygen requirements by increasing left ventricular fiber length, end diastolic pressure and systolic ejection period The net physiologic effect of beta-adrenergic blockade is usually advantageous and is manifested during exercise by delayed onset of pain and increased work capacity

In dosages greater than required for beta blockade, INDERAL also exerts a quinidine-like or anesthetic-like membrane action which affects the cardiac action potential The significance of the membrane action in the treatment of arrhythmias is uncertain

The mechanism of the antimigraine effect of propranolol has not been established Beta-adrenergic receptors have been demonstrated in the pial vessels of the brain

Beta receptor blockade can be useful in conditions in which, because of pathologic or functional changes, sympathetic activity is detrimental to the patient But there are also situations in which sympathetic stimulation is vital For example, in patients with severely damaged hearts, adequate ventricular function is maintained by virtue of sympathetic drive which should be preserved In the presence of AV block, greater than first degree, beta blockade may prevent the necessary facilitating effect of sympathetic activity on conduction Beta blockade results in bronchial constriction by interfering with adrenergic bronchodilator activity which should be preserved in patients subject to bronchospasm

Propranolol is not significantly dialyzable

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension, it may be used alone or used in combination with other antihypertensive agents, particularly a thiazide diuretic INDERAL LA is not indicated in the management of hypertensive emergencies

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris

Migraine: INDERAL LA is indicated for the prophylaxis of common migraine headache The efficacy of propranolol in the treatment of a migraine attack that has started has not been established and propranolol is not indicated for such use

Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis, especially for treatment of exertional or other stress-induced angina, palpitations, and syncope INDERAL LA also improves exercise performance The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation Clinical improvement may be temporary

CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock, 2) sinus bradycardia and greater than first degree block, 3) bronchial asthma, 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL

WARNINGS. CARDIAC FAILURE Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure, and its inhibition by beta blockade may precipitate more severe failure Although beta blockers should be avoided in overt congestive heart failure, if necessary, they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE, continued use of beta blockers can, in some cases, lead to cardiac failure Therefore, at the first sign or symptom of heart failure, the patient should be digitalized and/or treated with diuretics, and the response observed closely, or INDERAL should be discontinued (gradually, if possible)

> IN PATIENTS WITH ANGINA PECTORIS, there have been reports of exacerbation of angina and, in some cases, myocardial infarction, following abrupt discontinuance of INDERAL therapy Therefore, when discontinuance of INDERAL is planned the dosage should be gradually reduced over at least a few weeks, and the patient should be cautioned against interruption or cessation of therapy without the physician's advice If INDERAL therapy is interrupted and exacerbation of angina occurs, it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris Since coronary artery disease may be unrecognized, it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications

Nonallergic Bronchospasm (e.g., chronic bronchitis, emphysema)— PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors

MAJOR SURGERY The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial It should be noted, however, that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures

INDERAL (propranolol HCl), like other beta blockers, is a competitive in
receptor agonists and its effects can be reversed by administration of suc
dobutamine or isoproterenol However, such patients may be subject to pro
hypotension Difficulty in starting and maintaining the heartbeat has also bee
beta blockers

DIABETES AND HYPOGLYCEMIA Beta-adrenergic blockade may p
pearance of certain premonitory signs and symptoms (pulse rate and pressu
acute hypoglycemia in labile insulin-dependent diabetes In these patients,
difficult to adjust the dosage of insulin

THYROTOXICOSIS Beta blockade may mask certain clinical signs of h
Therefore, abrupt withdrawal of propranolol may be followed by an exacerbatio
of hyperthyroidism, including thyroid storm Propranolol does not distort thyroi

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME, several ca
reported in which, after propranolol, the tachycardia was replaced by a seve
requiring a demand pacemaker In one case this resulted after an initial
propranolol

PRECAUTIONS. *General* Propranolol should be used with caution in patient
hepatic or renal function INDERAL (propranolol HCl) is not indicated for t
hypertensive emergencies

Beta adrenoreceptor blockade can cause reduction of intraocular pre
should be told that INDERAL may interfere with the glaucoma screening test.
lead to a return of increased intraocular pressure

Clinical Laboratory Tests Elevated blood urea levels in patients with sever
elevated serum transaminase, alkaline phosphatase, lactate dehydrogenase

DRUG INTERACTIONS Patients receiving catecholamine-depleting drug
pine should be closely observed if INDERAL is administered The added
blocking action may produce an excessive reduction of resting sympathetic
which may result in hypotension, marked bradycardia, vertigo, syncopal attack
hypotension

Carcinogenesis, Mutagenesis, Impairment of Fertility Long-term studies
been conducted to evaluate toxic effects and carcinogenic potential In 18-m
both rats and mice, employing doses up to 150 mg/kg/day, there was no eviden
drug-induced toxicity There were no drug-related tumorigenic effects at any
levels Reproductive studies in animals did not show any impairment of
attributable to the drug

Pregnancy Pregnancy Category C INDERAL has been shown to be
animal studies at doses about 10 times greater than the maximum recommend

There are no adequate and well-controlled studies in pregnant women. I
be used during pregnancy only if the potential benefit justifies the potential

Nursing Mothers INDERAL is excreted in human milk Caution should be
INDERAL is administered to a nursing woman

Pediatric Use Safety and effectiveness in children have not been establ

ADVERSE REACTIONS. Most adverse effects have been mild and tran
rarely required the withdrawal of therapy

Cardiovascular bradycardia, congestive heart failure, intensification of
tension, paresthesia of hands, thrombocytopenic purpura, arterial insufficien
Raynaud type

Central Nervous System lightheadedness, mental depression manifest
lassitude, weakness, fatigue, reversible mental depression progressing to
disturbances, hallucinations, an acute reversible syndrome characterized by
time and place, short-term memory loss, emotional lability, slightly clouded
decreased performance on neuropsychometrics

Gastrointestinal nausea, vomiting, epigastric distress, abdominal cran
constipation, mesenteric arterial thrombosis, ischemic colitis

Allergic pharyngitis and agranulocytosis, erythematous rash, fever comb
and sore throat, laryngospasm and respiratory distress

Respiratory bronchospasm

Hematologic agranulocytosis, nonthrombocytopenic purpura, thr
purpura

Auto-Immune In extremely rare instances, systemic lupus erythemat
reported

Miscellaneous alopecia, LE-like reactions, psoriasiform rashes, dry e
tence, and Peyronie's disease have been reported rarely Oculomucocuta
involving the skin, serous membranes and conjunctivae reported for a beta bl
have not been associated with propranolol

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hy
sustained-release capsule for administration once daily If patients are switche
tablets to INDERAL LA capsules, care should be taken to assure that the des
effect is maintained INDERAL LA should not be considered a simple mg for
INDERAL INDERAL LA has different kinetics and produces lower blood levels
be necessary especially to maintain effectiveness at the end of the 24-hour

HYPERTENSION—*Dosage must be individualized* The usual initial d
INDERAL LA once daily, whether used alone or added to a diuretic The
increased to 120 mg once daily or higher until adequate blood pressure co
The usual maintenance dosage is 120 to 160 mg once daily In some instances
mg may be required The time needed for full hypertensive response to a
variable and may range from a few days to several weeks

ANGINA PECTORIS—*Dosage must be individualized* Starting with 80
once daily, dosage should be gradually increased at three to seven day interv
response is obtained Although individual patients may respond at any d
average optimum dosage appears to be 160 mg once daily In angina pecto
safety of dosage exceeding 320 mg per day have not been established

If treatment is to be discontinued, reduce dosage gradually over a perio
(see WARNINGS)

MIGRAINE—*Dosage must be individualized* The initial oral dose is 80
once daily The usual effective dose range is 160-240 mg once daily The
increased gradually to achieve optimum migraine prophylaxis If a satisfactor
obtained within four to six weeks after reaching the maximum dose, INDE
should be discontinued It may be advisable to withdraw the drug gradually
several weeks

HYPERTROPHIC SUBAORTIC STENOSIS—80-160 mg INDERAL LA on

PEDIATRIC DOSAGE—At this time the data on the use of the drug in this a
limited to permit adequate directions for use

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History

The Enigma of Ancient Cranial Trepanation†

ARTHUR C. AUFDERHEIDE, M.D.*

Cranial trepanation, the surgical creation of a hole in the cranium of a living person, is an ancient practice. It was enormously popular in Europe during the New Stone Age, probably for ritualistic reasons. Later trepanation was practiced much less frequently by widely scattered peoples for both therapeutic and magico-religious reasons. In about 500 B.C. a resurgence in Peru rivalled that of Neolithic Europe. In Peru trepanation was probably performed for medical reasons, perhaps in response to local warfare methods. In Europe it persisted until late medieval times, and such operations are still perfomed occasionally today in rural parts of Africa, South America and Melanesia.

E. G. SQUIER never expected the furor which followed when he sent the skull to his friend Paul Broca, the French physician (whom we memorialize with the brain's speech area). As a French diplomat in Peru in the mid-nineteenth century he was curious about the obviously man-made rectangular hole in the ancient native skull he had acquired there. It was, after all, not the first prehistoric skull with an anthropogenic defect. The French had been finding examples in their country since 1685, but had always believed them to have been created during some postmortem ritual. Paul Broca electrified both the scientific and the general public with his 1867 publication declaring the defect to be the product not only of a prehistoric surgical procedure on a living patient, but that the patient had survived the operation! The suggestion was well timed; only eight years earlier Charles Darwin had published his ''Origins of Species'' and conditioned many minds to a different view of antiquity. They re-examined previously excavated skulls and identified the tell-tale evidence of antemortem surgery which their previous bias had not permitted them to accept. By 1872 Broca's countryman Prunieres described evidence of antemortem surgery during the European Neolithic (New Stone Age) period, (the five millenia or so ending about 3000 B.C.) in skulls from the stone tombs of southern France, and others soon followed. More than 1500 ancient trepanned skulls have now been reported and each year brings more.

Where and When

It is not easy for us today to accept the concept that an operation which we still include among the most hazardous in our surgical repertoire, was being performed in Europe by tribes living on the banks of the Danube 5000 years ago. The procedure became popular throughout central Europe and the Balkans. By 2000 B.C. southern France had actually become a trepanation center. Later Hippocrates (ca. 400 B.C) advised it for certain head wounds, and the Roman Celsus (ca. 25 A.D.) detailed it so accurately the Arabs accepted his description as a medical standard and spread the procedure widely, especially through North Africa in the expansion of Islam during the century following Mohammed's death in 632 A.D. The practice gradually declined in Europe, disappearing during the medieval period.

There is much folklore about cranial trepanation in China and Tibet but few specimens have been found there. Prince Jivaka, medical advisor to Buddha, learned it at an Indian trepanation school and some attribute its dissemination in Asia to the spread of Buddhism during the five centuries before Christ.

In Africa the practice was quite focal. The thousands of excavated ancient Egyptain skulls do not include a half-dozen examples. Its frequency in Algeria may be the legacy of the sweep of Islam through North Africa in the seventh century A.D. No specimens have been found in South Africa, though occasionally modern reports emanate from Kenya and Ethiopia.

In the Pacific the practice seems to have been limited to Melanesia where occasional trepanations are still carried out.

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*Department of Pathology and Laboratory Medicine, University of Minnesota, Duluth.

†This paper was originally presented on January 5, 1983, at the University of Minnesota-Duluth School of Medicine, as part of the Department of Pathology and Laboratory Medicine's 1982-1983 series on Historical Aspects of Medicine and Disease.

Except for an occasional find (many of questionable validity) in North and Central America, the people of the New World seem to have embraced this practice primarily in what is now Peru and Bolivia beginning about 500 B.C.

How Often

Much evidence, such as flowered wreaths among grave goods, is accumulating slowly to demonstrate how inappropriate is the all too common presentation of Stone Age man as a hairy, emotionless brute. To this evidence we can now add the almost incredible observation that nearly 3% of all excavated Neolithic skulls bear the stigmata of antemortem cranial trepanation. Except in Peru, the procedure never again reached the popularity it enjoyed during this period. Wherever and whenever trepanation was practiced by the ancients, its frequency seems to have varied by locale with the degree of enthusiasm by local practitioners. It is absent in some Melanesian islands while in others few males have escaped it. Even in Peru skull collections reveal a variable rate from zero in Machu Picchu to nearly 40% in certain valleys, averaging 5% overall. Certainly a procedure with this level of acceptance by any people at any time deserves our serious consideration.

How

Since the ancient trepan operator faced the same problems the modern neurosurgeon does, it is useful

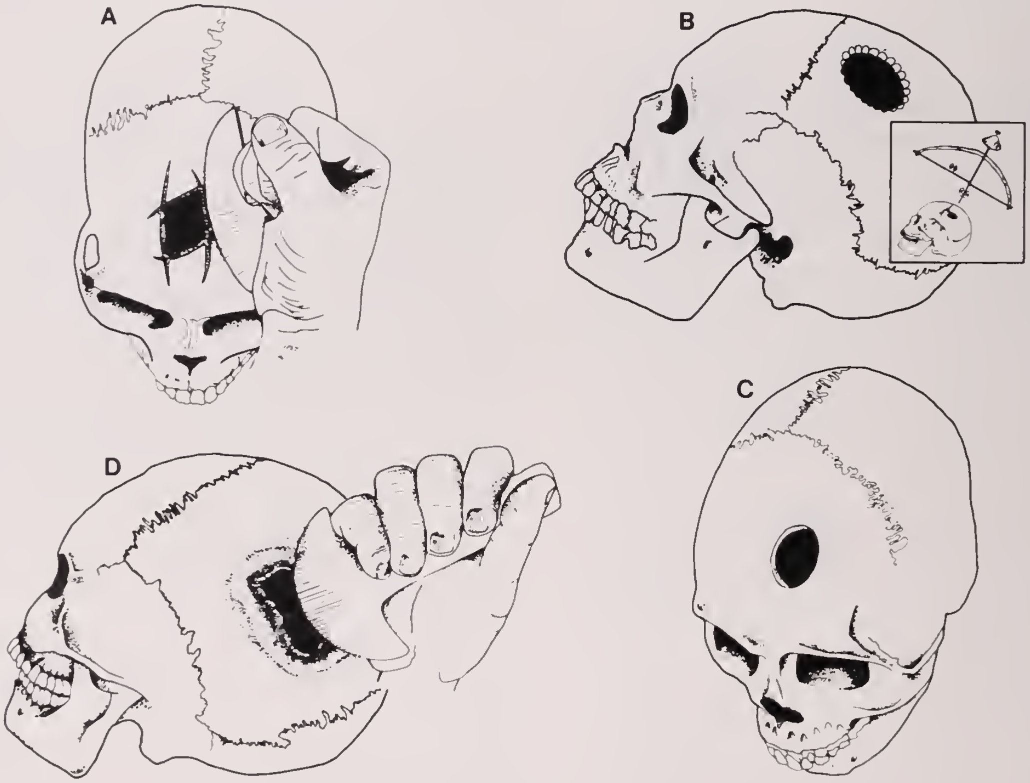

Figure 1 — Methods Used To Create Trepanation Defect — (A.) Incision: A knife (in Peru a semilunar-shaped blade on a long handle — "tumi knife") was applied with a rocking motion to create a rectangular defect. It required extensive scalp retraction to supply space for the knife action. Few of these skulls show complete healing, suggesting a high mortality. This was largely a Peruvian technique, only a few examples emerging from the Middle East and Europe. (B.) Boring: Multiple, closely-spaced holes were drilled in a circle and intervening bone chipped out. Because each separately drilled hole threatened dural penetration, it was a dangerous and little-used method. Examples have been found almost exclusively in Peru and are rare even there. (C.) Cutting: A circular groove was incised and traced repetitively until penetration was achieved. This was the favorite technique of the Neolithic European trepanner; it was also popular in Peru where it was frequently combined with the scraping technique. (D.) Scraping: A flat, sharp-edged, gently curved blade scraped the surface repeatedly until the skull was penetrated producing a broad, saucer-like excavation. This (sometimes combined with cutting) appeared to have been the most popular and safest, as judged by complete healing.

to examine each of the necessary steps.

Position:

Peruvian pottery art suggests the most common patient position was sitting or semi-reclining with the head between the operator's knees.

Anesthesia:

Our assumption of the absence of effective anesthesia makes the popularity of this ancient practice all the more puzzling to us. Judging from the extent of the fractures in some Peruvian skulls, it seems quite probable that many of the patients were in a state of post-traumatic coma at the time of surgery; in others pain sensation conceivably may have been dulled by alcoholic beverages or hallucinogenic herbs. It is possible that some modern practices such as cautery (hot iron) or a tight scalp band induced local anesthesia, but the most probable of all is that no anesthesia at all was employed. Motion picture films of modern trepanations in Africa demonstrate the procedure without anesthesia, and a survivor of the operation in Bolivia is quoted as reporting little pain after the periosteum was reflected.

Antisepsis

Of all the features of this primitive operation, the most baffling is the lack of serious infection. The bone surrounding the cranial defect only rarely reveals the pock-marked deformity characteristic of suppurative osteomyelitis. We have no information whether the ancients used leaf extracts, copper salts, cautery or other possible methods of antisepsis. Some have suggested their ''secret'' to infection control was a combination of healing power of the highly vascularized scalp combined with a patient who had not been colonized by pathogenic bacteria as our modern hospital patients often are. Majno reminds us that wound infection as a major problem is of relatively recent origin, dating to the onset of our practice of concentrating ill people in certain buildings (''hospitals''). Although the skulls themselves leave no doubt about the infrequency of major infection, the reason remains enigmatic.

Scalp Incision

The parietal bone is the most common site for the defect in Neolithic skulls (where ritual rather than trauma was the probable surgical ''indication'' — see below). In Peru, where the relief of post-traumatic symptoms seems to have been the primary surgical indication, the left frontal bone was chosen most often — perhaps because most adversaries were right-handed. Other areas were occasionally chosen. Interestingly the temporal bone was rarely used, probably because injury to the underlying middle meningeal artery would result in serious or fatal hemorrhage.

Hemostasis

Pressure or clot-inducing substances with a large surface area (crushed, dry leaves) may have been used to stem the flow of scalp blood, but the only tangible evidence available is the inclusion of broad-jawed pincers in Peruvian instrument kits.

Craniectomy

Pottery art and the skulls themselves suggest four methods were used to penetrate the cranium: incision, boring, cutting and scraping. These are illustrated in the accompanying figure.

The usual defect measures 2-3 centimeters in diameter, but the range is wide — from a few millimeters to a Balkan Neolithic skull from which the entire upper half of the cranial vault was removed (successfully — the edges are healed!). Not every skull with a hole in it was trepanned. Conditions capable of producing ''pseudotrephines'' include metastatic carcinoma, histiocytosis X, congenital parietal foramen, antemortem or postmortem trauma and many others, but with appropriate interpretative caution differentiation is usually possible.

The surgical instruments used to create the defect varied with time and location. In Peru the semilunar ''tumi'' knife of copper was possible; stone or obsidian knives were also common there. Melanesians often used shark's teeth or shells. Modern operators frequently employ pocket knives. All of these have been tested on cadaver or living animal skulls and found to be surprisingly effective. In 1953, Lima neurosurgeons submitted them to the ultimate measure when they drained a subdural hematoma in a living Peruvian patient using only trepanation instruments from the archaeological museum and employing only a tight band around the scalp for local anesthesia.

An observation of enormous importance is that many of the trephines cross the sagittal suture. Since incision of the superior longitudinal venous sinus in the dura underlying that suture would surely have resulted in fatal hemorrhage, it is assumed that ancient cranial trepans were carried out as *extra*dural operations.

Results

Patient survival can be judged from the signs of bone healing at the edges of the defect. Survival rates in some groups of ancient skulls are astonishingly high: over 80% of Neolithic and Melanesian patients survived the operation, and modern operators in Kenya claim a mortality of less than 5%. In Peru, where trauma was a common indication for cranial trepanation (see below) about half of the patients died, though it can seldom be determined whether death was due to the injury or the operation. Even 50% would be considered an attractive survival rate to a 1900 neurosurgeon in Guy's Hospital where three-fourths of their patients succumbed, usually to pyogenic infection.

Why

We have very few guides available to help us determine whether ancient trepanations were carried out for ritualistic ("magico-religious?") reasons or for those of medical therapeutics. Ceramic art is too ambiguous, there is danger in extrapolating motives for modern practices backwards in time, and Indian historians in Peru following Spanish conquests provide limited observations. We must derive what information we can from the skulls themselves.

Several features suggesting ritualism are associated with Neolithic skulls. These rarely demonstrate fractures or other signs of trauma; in France, at least, most patients were women; multiple defects in the same skull are common; and the production of rondelles was frequently carried out. Rondelles are small discs of bone cut postmortem from a skull which contained an antemortem trepan defect; the discs were cut in such a way as to include an arc of the trepan defect edge and were then perforated to accommodate a necklace cord, presumably worn as an amulet (charm).

In Peru there is strong evidence that relief of post-traumatic symptoms was the most common indication for cranial trepanation. Ancient Peruvian warfare commonly involved hand-to-hand combat with long-handled, stone-headed maces whose knobby projections often produced characteristic depressed skull fractures. The sling shot was also a military weapon, its sling ball commonly inflicting a hemispherical depression in the skull. About half of Peruvian trepanned skulls reveal fractures; at least some of those which do not may represent exploratory operations in search of fractures. In some, multiple juxtaposed trepans quite obviously were efforts to follow and excise a fracture line. We have no way of knowing their specific therapeutic goal: epidural hematoma? excision of depressed fracture? foreign body removal? Other?

In Kenya today the operation seems to be carried out exclusively for post-traumatic syndromes, but in Melanesia epilepsy and other neurological conditions with symptoms similar to those produced by trauma are common reasons for native cranial trepanation.

Separation in medical therapeutics or ritualistic motivations may well be self-defeating oversimplification. A direct, medically effective procedure may acquire cultural oversimplification. A direct, medically effective procedure may acquire cultural distinction and subsequently be performed for this purpose in the absence of the original medical condition. If this concept seems too remote to be credible, we might reflect that modern medicine's roots lie in the magico-religious area. The human healer, Aesculapius, was deified after death and worshipped in a Greek temple at Epidaurus.

The answer to the question of why this procedure was performed by the ancients would seem to be simply that the same operation was carried out by different people at different times in different places for different reasons.

Summary

This brief overview of the history of cranial trepanation is a strange story of a *belief* at least as ancient as Stone Age man, that creating a hole in the skull would somehow benefit the person; a tale of eerie scenes of the tribal specialists in many different parts of the world performing this bloody and dangerous operation — sometimes for magical and sometimes for medical reasons — with an enviable survival rate and apparently with sufficient symptomatic success to maintain a popular demand, in some areas to the present day.

References

One recent author commented wryly that more articles have now been written on this subject than there are specimens! For those who wish to pursue the subject further, the following general reviews can serve as a port of embarkation:

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Minnesota Medical Association

Data Collection and Dissemination

As part of the ongoing search for methods to control health care costs, a summons has come from a myriad of sectors for the development and implementation of data collection systems. Public and private, local and national organizations have demanded to review data that evaluates physician practice patterns.

The desired result of these programs is a modification of practice patterns which vary significantly from an established norm. However, the Minnesota Medical Association has expressed concern that methods of information collection as well as plans for interpretation and application of the raw data have not been clearly defined.

The Association responded to this impending crisis situation by forming an ad hoc committee to review the situation and make recommendations regarding information systems to assure accuracy and fairness and which would result in meaningful progress towards the stated goal. Such exacting standards are needed for any exercise of this kind to be credible.

The Committee developed a position paper which focuses on the tenet that the primary purpose of data collection is education of both the physician and the health care purchaser.

There are three major theses of our report:

1. Data must be statistically accurate: "All data must be identified as to the level of its statistical significance."

2. Data must be meticulously interpreted: "The aspects of care which can be related to quality must be identified and only those items which can objectively be quantified should be considered."

3. Dissemination of data must follow a due process: "Providers should have reasonable time to review their own data in relationship to the standard against which they are being compared, and the opportunity to comment upon it prior to its disclosure."

Data, whether aggregate or physician-specific, will continue to be collected and used by many entities. The Minnesota Medical Association policy sets forth a standard of fairness and accuracy for data collection systems.

Richard B. Tompkins, M.D.
Chairman
Ad Hoc Committee on Data
Collection and Dissemination

Policy of the Minnesota Medical Association on Data Collection and Dissemination

Introduction

THE AD HOC COMMITTEE on Data Collection and Dissemination was formed in response to various community and private initiatives taking place both in Minnesota and at the national level, calling for the collection, interpretation and use of data relating to the provision of health care by physicians. Although varied in scope and emphasis, in all projects the hoped for end result was a method by which physician providers could be evaluated against a predefined set of criteria and measured against their peers. Formally called for by the Board of Trustees on September 15, 1984, the Committee was given the following charge:

> The Ad Hoc Committee on Data Collection and Dissemination is charged with the responsibility for examination and formulation of an Association policy regarding the methods of collection, use and interpretation of data regarding price, practice style, utilization patterns, and cost for health care providers, including physicians and health care plans.

In order to fulfill its charge the Committee identified workplan activities to be accomplished:

- To review data collection initiatives, existing data collection entities and to define 'data' in the medical context.
- To decide how data collection and use fits into the goals of organized medicine.
- To compile a complete set of guiding principles on data collection and dissemination.

Following a general review of current data collection activity occurring on the local and national level, presentations regarding specific data collection systems were made to the Committee. Representatives from the Foundation for Health Care Evaluation, the Professional Standards Quality Council, the Mayo Clinic, Blue Cross and Blue Shield of Minnesota and the Physicians Health Plan all outlined their current data collection activities. As the presentations were made, it was evident that these entities were collecting data both prospectively and retrospectively from various sources such as billing systems, claims systems, and hospital charts, and that each entity would be putting the data to different uses. For example, data collected by the Foundation for the Private Review Program, is being used to allow large private employers to evaluate hospital utilization within their individual health insurance plan, while Physicians Health Plan was collecting data to evaluate utilization patterns among physicians participating within their own HMO program.

Although data collection is being done with the interests of varying final users in mind, the data systems described were primarily designed to evaluate the effectiveness of the use of health care resources by physicians as compared to their peers. In this sense, organized medicine can be well served by accurate data systems which could be incorporated into educational tools for physicians needing to learn methods of coping effectively within an increasingly competitive health care environment.

Distillation of information presented by representatives of private data collection entities as well as a review of existing MMA and AMA policy on this issue resulted in the following premises being adopted as the foundation for continuing examination of data issues:

Basic Premises

A. For purposes of this policy, the definition of the term data is: Information organized for analysis or used as the basis of a decision.

B. Data is and will continue to be collected, massaged, used and disseminated regardless of the conclusions of the MMA Ad Hoc Committee on Data Collection and Dissemination.

C. The primary purpose of collection of physician-specific data should be to educate purchasers of health care and individual physicians to better understand the health care system in the adoption of cost-effective treatment patterns which are not in conflict with maintaining a standard of excellence. Only after this has been attempted should data be used for any other purpose.

D. Systems of data collection, developed to respond to the needs of the competitive marketplace, are a legitimate area of concern for the medical community.

E. The principles outlined here must reflect the best possible data collection process, and represent a standard for any system whether in use now or developed in the future.

Principles of Data Collection and Dissemination

I. MMA Involvement in Private Data Systems Development

Data, in various forms and from various sources, is and will continue to be collected and used within the marketplace. Although the end use of data may vary depending upon its collectors and source, the MMA should have a clearly defined role in development and review of data systems in order to ensure that data collection is performed adequately and has as its primary purpose the education of the provider.

The role of the MMA in the data collection process should include; participating in data system development; reviewing established data collection systems; and, identifying resources for physicians seeking redress for damage caused by inappropriate interpretation or use of data. To perform these roles, the following principles apply:

- MMA should be involved in the development of data collection systems by third party payers or other private groups by participating with such groups or being present at the table when deemed appropriate. Maximum involvement of the MMA would mean the active participation of a physician representative in the private data collection system development. The minimum involvement of MMA would be to supply the MMA established policy on data collection to the group.
- Participation by MMA on any level, with any group in the process of developing a data collection system does not imply endorsement of the project by MMA.
- MMA should create a data section to function as an ombudsman for both the public and the profession. This section could track various sources of data, collect and evaluate the elements contained in that data, and keep the public and the profession informed as to the application of and the limitations of any data system.
- MMA should develop a mechanism to direct a physician who claims to be damaged by inaccurate data or analysis of data, to an appropriate source or method of redress.

II. Accuracy of Data

Misuse and misinterpretation of data which cannot be verified as to its accuracy or statistical significance may occur. Accurate data collection, especially when provider specific data is being extracted, is extremely expensive, however, when it is done the following guidelines should apply:

A. General Guidelines

- All data collection efforts must allow for accurate identification of the provider who was responsible for ordering the service(s) that form the basis of the data.
- Providers must be given the opportunity to verify the accuracy of data collected when they are the source of that data.
- All data must be identified as to the level of its statistical significance.
- Data collected must be confirmed as being comparable among providers being studied, i.e., teaching hospital to teaching hospital, specialist to specialist.
- Data collectors should include a statement of the limitations of the data used in their reports.
- Data collectors must be able to show the source of the data that was used, i.e., patient charts, billings, etc.
- Disputed data must be accompanied by a record of the basis upon which it is being disputed.

B. Provider Specific Data

- Data for an individual provider (physician usually) can be collected and identified only with a complex system of matching a physician with orders specifically written by that physician. Anything less, for patients having more than one physician writing orders, creates a preponderance of inaccurate, misleading, uninterpretable and abused information.
- Individual provider specific data should be at least 85% accurate. This measure of accuracy refers to the original source from which the data is collected, i.e., claim form, medical record, etc.
- Collection of provider specific data should reflect **all** services performed by a given provider regardless of the pay source or organizational arrangement under which the services were rendered.

C. Aggregate Data

Aggregate data is data gathered from individual provider sources but considered collectively rather than individually.

- Aggregate data has the best prospect of describing what transpired during intense health care encounters and has the best prospect for protecting individual patients and individual providers from misrepresented conclusions drawn from inaccurate or misinterpreted data.

III. Ownership of Data

The question of ownership of data can be approached from two perspectives. First, what are the rights of the subjects of data collection systems in the use of that data by its collectors? Second is the question of who actually does own the data.

In many instances, data collection is done as an offshoot or adjunct of claim payment, cost containment programs or utilization review by third parties. In other cases, independent entities may undertake data collection at the request of employers wishing to evaluate the effectiveness of their health care programs. There are also cases in which third party payers collect and collate data in order to review the efficiency of operation among providers within their own systems. These may be instances where data ownership may be shared by the medical community with other entities who are actually collecting that data including payers and/or employers.

- Equal protection must be afforded all providers identified as data sources, regardless of the entity claiming ownership of that data.
- Ownership of data does not encompass the authority to disregard the rights of the providers identified as data sources.

IV. Interpretation of Data

Interpretation of data occurs after collection and verification of data have taken place. The elements which should be considered in interpreting data and the information which should be included to indicate how and by whom the interpretation was done need to be considered.

A. Elements to be considered in Interpretating Data

The aspect of care which can be related to quality must be identified and only those items which can be objectively quantified should be considered.

1. Quantifiable Elements
    - A well constructed data collection system can accurately reflect quantity of service. This includes non-subjective elements regarding quality of care such as length of stay; morbidity and mortality; cost of care; and practice patterns including such things as referrals, choice of surgical setting, and patient mix by age, sex, and marital status.
    - The use of a patient severity index should be considered in order to guarantee validity of data interpretation. There is no severity index currently available which is fully satisfactory, but work is proceeding to develop one.
    - The socio-economic status of the provider's patient population.
2. Non-Quantifiable Elements

    Certain aspects of medical care cannot objectively be reduced to quantifiable form. This includes such items as physician communication skills and physician attitudes toward improving the overall life style of patients through health education efforts. Non-quantifiable elements do not belong in a data base, and physicians should not be measured against non-quantifiable elements or processes. However, quality elements which cannot be directly measured should be considered in an overall evaluation of physician activity.

B. Information to be Included to Indicate How and By Whom Interpretation Was Done.

The following items are identified as necessary for inclusion in dissemination of any interpretation of data in order to allow the user of that information to evaluate its probable accuracy. Physicians who are data sources should receive and review all of their own data and interpretations of that data must include the statement of any provider who wishes to comment upon it prior to dissemination.

1. Base Guidelines for Interpretation of Data
    - Statistical significance of data should be stated.
    - Any manipulation of data should conform to recognized standards and both the standard used and the manipulation process should be so noted.
    - All interpretations of data should include a statement of how conclusions were derived.
    - All interpretations of data should include a statement as to the source of the data base.

- All interpretations of data must be accompanied by the statement of any provider who wishes to comment on the accuracy and/or the interpretation of the data.
- All interpretations of data should be accompanied by a statement indicating who the interpreters of the data were.

V. Dissemination of Data

Release of provider specific information must only be done after the individual provider source has been given a reasonable opportunity to review the data and to comment upon it if desired. This data should be used for educational purposes first and punitive purposes only after an educational effort has failed.

If it is decided to disseminate data, any comment made by providers relative to the data or its interpretation should become a part of the final package and included in all distributions. It is hoped that entities using and disseminating health care data will use it for predetermined legitimate purposes. Appropriate guidelines for data dissemination are as follows:

- Providers should have reasonable time to review their own data in relationship to the standard against which they are being compared, and the opportunity to comment upon it prior to its disclosure.
- Dissemination of provider specific data should be in response to a clearly defined and specific purpose stated in advance by requesters who can demonstrate the capacity to use the data with prudence and sensitivity.

Recommendations of the Committee

The issue of data collection and dissemination led to review of several aspects of the potential impact of data collection and use on the physician community as a whole. Although these issues exceed the scope of the policy set forth above, it is recommended that they be considered by other forums within the MMA.

A. Provider Protection

Review of the issues related to data collection and use encompassed review of the legal constraints on data dissemination now in place for public entities conducting data collection. Although there may be risks involved in seeking similar legislative action to govern private data collection, the following recommendation is offered:

- That the MMA Committee on Legislation review the possibility of Legislative action which would require private data collection activities to conform to standards for data use and dissemination currently set by law for data collection by public entities.

B. Provider Education

In keeping with the strong belief reflected throughout this document that data collection and use should, as its primary function, be directed toward provider education, the following recommendations are offered:

- That the MMA educate its constituency to assist in the creation of quality data.
- That an effort be made by the provider community to educate physicians, who by use of data are accurately pictured as outliers to the system, in the practice of responsible, cost-effective, quality care.
- That an individual physician, accurately identified as an outlier, who has had the opportunity to exercise due process rights, refuses, within a reasonable time period, to modify his or her practice style, be publicly identified.

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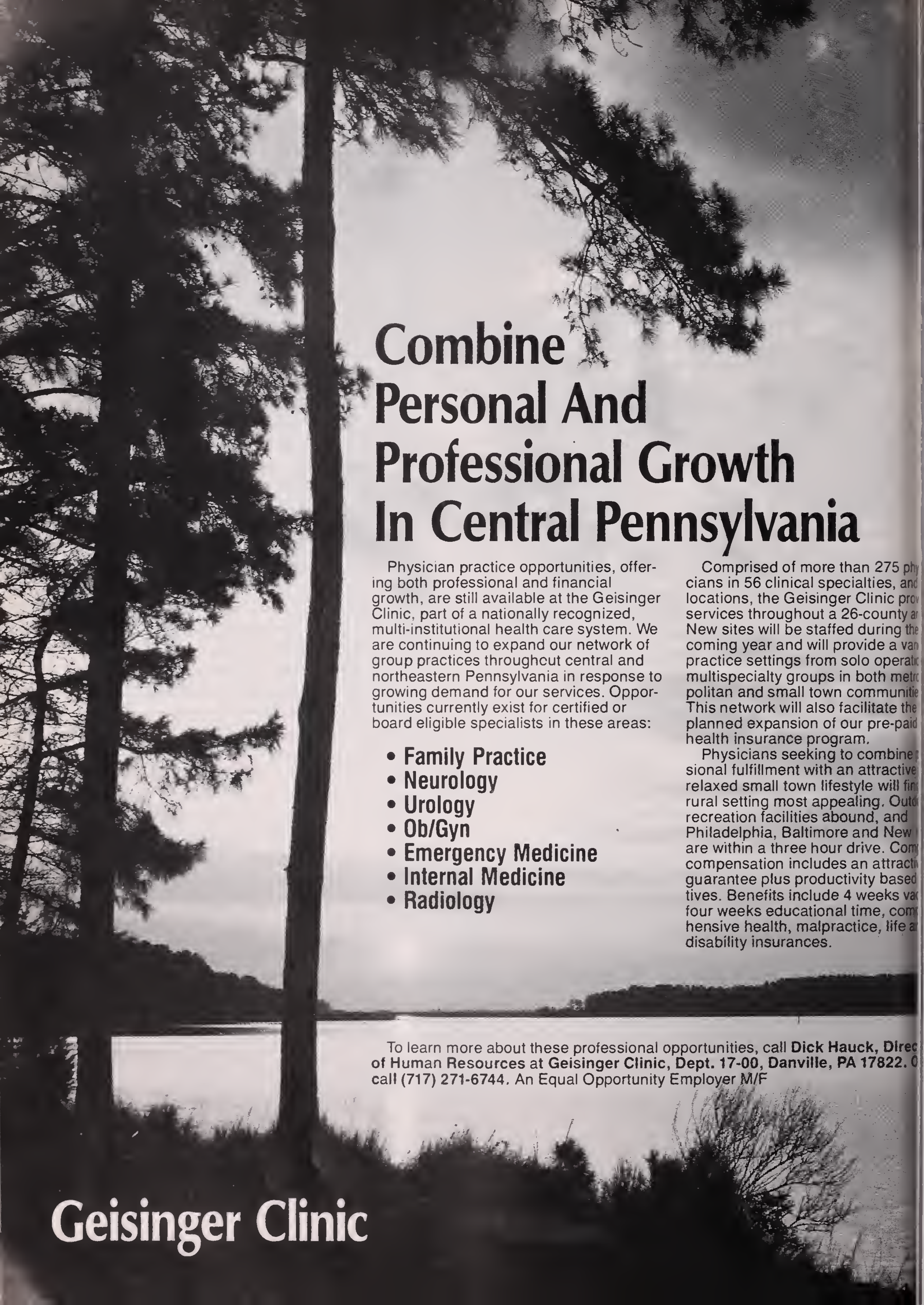

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Physician Payment

Rapid changes in the health care environment have helped to fuel development of health care programs which differ from the traditional fee-for-service, indemnity programs.

Along with the changing of the ground rules for coverage and provider access, these new programs often require diverse payment methods such as capitation and fee schedule reimbursement.

The Minnesota Medical Association has developed policy statements on many of these issues relating to payment programs. Recently, the Council on Medical Practice and Planning completed a compilation of the Association's policy statements to allow organized medicine a base on which to build a comprehensive and timely policy which relates to an evolving system.

Our paper is an attempt to gather and build on these existing positions, to clearly identify the Association's strong commitment to maintenance of a pluralistic marketplace and to it support of programs which encourage quality, access and efficient administration.

The paper addresses each issue individually and includes a statement of principles which MMA endorses as crucial to health coverage plans and the maintenance of quality care within a competitive environment.

Richard B. Tompkins, M.D.
Chairman
Council on Medical
Practice and Planning

The Minnesota Medical Association Policy on Physician Payment

Purpose

THE QUESTION OF PHYSICIAN payment is one which has become increasingly complex as diverse payment mechanisms and changes in health care plans have proliferated, and as massive increases in the numbers of people whose health care is subject to some type of third party reimbursement have occurred.

Much of the innovation in health care payment program structure can be attributed to ongoing attempts to slow or halt the increasing cost of medical care. This has resulted in development of practice style guidelines and payment mechanisms which allow market competition based upon price, among the many health care plans.

Health care plan design is also being influenced by the purchasers of health care, who are becoming more sophisticated about the type of coverage which they are purchasing and the uses to which their health care premium dollars are being put. Under these circumstances, of rapidly evolving programs which are responding to diverse components of the health care system, it is difficult for physicians to identify those programs which meet the criteria necessary to allow the practice of quality medical care, while still maintaining the cost efficiencies necessary to allow competition.

It is the position of the Minnesota Medical Association that each health care plan must be able to meet certain criteria relating to patient access, cost, quality of care, and administration, to ensure that physicians who affiliate with or join that plan are not constrained from practicing medicine at the level necessary to ensure each patient's well-being.

Previous policy papers developed by the MMA have addressed some of these issues. These include the "MMA Policy on Medical Assistance" and the MMA report titled "Health Care Competition and Regulation — A System in Transition — Minnesota Physicians' Perspective". This review of physician payment will attempt to build on the groundwork established previously, on such issues as the necessity for maintaining a pluralistic approach to health care coverage and the need to maintain quality, access and efficient administration within health care plans. Additionally, this document will attempt to define the components of physician payment mechanisms within health care plans, which allow for maintenance of the appropriate balance between the necessary cost efficiencies while at the same time structuring physician incentives and peer review programs to guarantee appropriate quality of care.

General Issues

I. What is a health care plan mechanism?

The payment mechanism within a health care plan is the method used to both calculate and disburse the payment for health services rendered. Currently, payment mechanisms can be divided into two broad categories, fee-for-service and prospective payment.

Fee-for-service systems are those which establish a specific level of payment for each service delivered. This type of system encompasses usual, customary and reasonable (UCR) programs which develop provider specific fees based upon prospective charge data, and indemnity plans which assign a set fee which is paid for each service regardless of who provides it.

Prospective payment, (or as some have called it, prospective pricing), is a system in which a fee is determined based on historical data regarding treatment for specific diagnosis groups or, actuarially, for specific risk groups. Payment can be made either after the fact, when the diagnosis has been established, treatment completed, and the correct pre-established price assigned, as in the Medicare Prospective Payment System, or it can be made in advance, on the basis of estimated cost of service for a specifically identified patient group. In this case, a certain dollar amount (capitation) is allowed for each enrollee under each provider's care. This dollar amount is then paid at specific intervals regardless of the level or frequency of treatment that has occurred.

In general, payment mechanisms pay for services at the level established by the health care plan. This does not mean that payment levels are established to actually meet the fee determined by the physician to be necessary to cover his established cost. This is especially true in the current trend toward support for a return to relative value scales as reported recently by the Health Care Financing Administration, as well as in the moves toward prospective pricing and capitated payments.[1] Current trends both in fee-for-service and prospective systems seem to be moving away from the concept of usual, customary and reasonable and towards alternative fee payment modes, such as individual physician profiles based upon historical charge data, or payment at a certain percentage of the established UCR amount.

II. What are the necessary elements for a pluralistic marketplace for health care?

The Minnesota Medical Association has consistently endorsed the concept of a pluralistic approach to the health care marketplace which would encourage the necessary diversity for competition as well as allowing for the accommodation of diverse practice styles by allowing physicians and patients choices among many plans. A pluralistic marketplace also allows flexibility to offer the most effective programs in areas where patient demographics or limited physician distribution may not be conducive to intensive competition.

The concept of a pluralistic approach is one which would allow patients the choice of direct access to physicians through the fee-for-service model, and limited access through prepaid models such as HMOs. It also allows physicians to accommodate the needs of their practice style, patient load and specialty by allowing wide ranging choice among methods of coverage and payment.

Criticism of the pluralistic marketplace has frequently cited the supposition that health care cost control is often enhanced through the selection of plans with limited physician access by lower risk patients. A recent study published by the Rand Corporation indicates that selection issues do not exert significant influence on utilization levels among health care plans.[2]

III. What components for pricing of services should be identified as necessary in all payment mechanisms?

In a competitive environment, each health care plan will attempt to provide quality care at the lowest possible price. Certain components of health costs such as education and research, however, are being looked at as expendable by health care plans because they are not direct costs. Additionally, payment may be limited, as in the case of cognitive services, because measurements for fee determination have not currently been established or because the payer has severe funding limitations.

In spite of these limitations, all pricing of services should include the following components: a description of the universe from which fee information was derived including geographic boundaries and place of service, a description of the method for assessing the value of cognitive services, and a description of the degree to which the cost of medical education and research have been factored into the overall pricing structure. Assessment of these elements could then be made by physicians contemplating participation or affiliation with a specific health care plan.

IV. How can access to care be assured?

It is critical that health care plans carefully outline the actual process through which their subscribers, enrollees or insureds will be required to seek care and the level and credentials of practitioners which they will be able to see.

Physicians, prior to joining or affiliating with a health care plan, should understand the method of patient access to treatment and the ramifications for their potential to treat or direct treatment. Additionally, physicians should be satisfied that the health care plan design in no way blocks access to treatment necessary for patients by allowing access only to para-professional personnel for certain conditions, or erecting other barriers which might limit necessary care.

V. How can quality of care be addressed within health care plans?

Quality of care within a health care program may include many aspects of patient treatment which cannot be accurately or adequately quantified. This may be true either because the element cannot be effectively measured, for example, waiting time in a physician's office, or because it cannot be objectively verified, for example, levels of patient satisfaction.

It is critical not only that certain physician-defined criteria be established as necessary uniform measures of quality but that peer review also be established as the basis for credibly determining the quality of the service being delivered. Quality assurance programs must be integrated with whatever cost containment program has been set up by the plan and measures of quality for over-utilization as well as insufficient utilization must be addressed along with an assessment of final outcome of treatment.

VI. What are appropriate measures for cost control within health care plans?

Health care plans are finding it necessary to build into their coverage systems components which discourage improper utilization of services by both patients and providers. Such components might include restricting access to specialty care for patients by requiring referral from a primary care physician and/or requiring that a patient designate a primary care physician for coordination of their care. For physicians, the controls might include preadmission screening for hospitalization or denial of payment for medically unnecessary services.

Recent studies on physician perceptions of cost containment efforts have noted that physicians tend not to express as high a level of criticism of the current health care system as the general public. Also, as a group, physicians are not as willing to accept changes from or alternatives to the established fee-for-service system.[3] However, Dr. Richard Reece in a recently published article, estimates that of the physician population in the metropolitan Twin Cities over 90% have affiliated with some type of alternative health care plan.[4] Although Dr. Reece sees as inevitable the changes taking place in the health care market, he goes on to say that the virtues of the fee-for-service system, which include allowing the physician flexibility in his response to patient needs, can be preserved if physicians become involved in shaping these plans, specifically in defining plan management, quality assurance and cost containment strategies.[5].

Although historically, fee-for-service systems were not bound by cost containment programs, the realities of competition with other health care plan structures in which cost containment is paramount, means that preservation of the fee-for-service approach will require more extensive cost control efforts within the fee-for-service setting. Cost control methods in both fee-for-service and alternative health care plan structures must be monitored to assure that the incentives for savings do not undermine the need for quality of care.

VII. How is data collected for use by health care plans?

Data is collected by health care plans through computerized claims processing, quality control programs, and utilization control programs. Additional physician fee data may be gathered as a part of the pricing system established by the health care plan. Internal use of data by health care plans for these purposes is generally agreed to in advance by both physicians and patients. Data once gathered is generally agreed by the health care plan to be releasable only in aggregate form.

However, data is now being perceived by both purchasers and payers as another tool for streamlining the marketplace, by allowing identification of those physicians whose charge or practice patterns vary significantly from the norm. Physicians, prior to affiliation, should establish the extent to which private health care plans are able to utilize data collected in the course of doing business. In the case of publicly funded health care plans where legislative action may allow the collection and distribution of physician data, physicians should be prepared to clearly demonstrate limitations which exist within the data collection system and the potential for subsequent misinterpretation of provider specific information.

VIII. What are the elements essential to appropriate health care plan administration?

Health care plan administration must be designed to effectively combine utilization control, cost control, payment, patient access and communication. It is critical, if a plan is to survive in the competitive medical marketplace, that these elements be developed to encourage high quality care at low cost, with a method of patient access and attention to care which results in a high degree of patient satisfaction.

Adequate care for patients must be assured by the physician despite incentives intended to control cost. The physician is the patient's advocate. Fee-for-service plans, as well as those programs which move some percentage of financial risk from the plan to the provider, have been cited as having the potential to cause ethical conflict for the provider.[6]

An adjunct to the question of adequate care is the question of a health care plan's ability to guarantee certain levels of treatment to its enrolled population. This question has frequently arisen as a result of the clear indication that the Medicare Part A system is one which is becoming increasingly more questionable in its ability to pay for the services which it is promising to new and current beneficiaries. Physicians who treat Medicare beneficiaries are clearly concerned that the system may well be bankrupt within a relatively short period of time as the population ages and more and more people become eligible for Medicare benefits.

A final point is the necessity that health care plans be administered in such a way as to communicate openly and directly with both physicians and subscriber/enrollees on all issues relating to cost, access, coverage and plan benefits and exclusions.

Outline of Principles

I. A payment mechanism for physician services is one which establishes a certain price or value, usually by a third party payer, which may vary from the actual fee established by the physician for services rendered.

- Current payment mechanisms include:
  1. Fee-for Service
     a. Usual, customary and reasonable
     b. Indemnity
  2. Prospective Pricing
- One means of pricing may be the relative value index approach.
- Pricing systems which allow open access to providers should not prohibit balance billing by those providers who choose not to participate.

II. The health care marketplace, both public and private, should reflect a diversity of system approaches to health care payment.

- Within the health care marketplace, physicians should be free to contract with the entity(ies) of their choice.
- Fee-for-Service coverage must be included as one option in the pluralistic marketplace as the system which offers the greatest freedom of choice of provider and minimizes barriers to care.
- All health care payment systems should be treated equally under the law.

III. Payment mechanisms and pricing policies of all health care plans should include specifically identifiable components which are uniform among plans:

- Determination of price should not consider location of a physician's practice as a criterion.
- Cognitive as well as procedural services should be appropriately weighted in price determination.
- Costs of medical research, development and education should be assessed in the price determinations of each health care plan.
- Health care plans should develop payment levels which fairly reflect the actual cost of the service being delivered. Discounts must reflect economies of scale or other quantifiable cost reductions resulting from plan design.
- Prices established for certain services should not vary based on the place in which the service is rendered

IV. All health plans must clearly define and disclose the actual process by which actual or potential subscribers or enrollees may obtain access to care or treatment, as well as clearly identifying the experience and qualification of the providers whom the patient will see, the assurance that referral or consultation will be provided when necessary, the co-payment amount, if any, and the extent of coverage for particular benefits or services.

- Health care plans should provide for adequate supervision of care provided by non-physician providers.
- Health care plans should guarantee patient access to appropriate services.

V. All health care plans should have quality assurance programs which can measure aspects of quality against clearly defined standards and criteria.

- The MMA supports peer review conducted by organizations directed by physician-dominated boards.
- Review entities must use physician-determined criteria and use physicians as the final arbiters of quality of care issues.
- Physician reviewers should not be subject to discipline by the review entity because of any consequences of their review decisions.
- The relationship with any review entity, physician-dominated or otherwise, should be arms-length.

VI. Cost containment efforts must not preclude the maintenance of appropriate quality of care. Placement of incentives within the health care plan structure, designed to encourage cost control, must allow for delivery of care within the bounds established as appropriate for quality assurance.

- Data collection efforts, for purposes other than those used for identifying physicians on a preferred provider basis, which result in the identification of physician practice patterns which fall outside of the established community and plan norm may result in physicians being subjected to plan sanctions. Practice patterns should not be interpreted to mean purely financial statistics, but should include such variables as patient age, severity of cases, etc[7].
- Utilization review, concurrent review and preadmission certification programs are all appropriate cost containment measures when admin-

istered in conjunction with a quality assurance program.

VIII. Administration of health care plans must allow for an ethical and honest relationship to be established among the plan, the physician and the patient/subscriber/enrollee.

- Any health plan which promises certain services or certain levels of benefit or coverage to actual or potential enrollees or subscribers must be able to verify that delivery of those services is possible under its established funding mechanism.
- The MMA will continue to monitor the Minnesota Medicaid Demonstration Project in order to affirm its position that transfer of risk from the health care plan to the health care provider does not in itself undermine quality and availability of care.
- Health care plans should communicate with subscribers or enrollees regarding limits to, or levels of payment in a way which does not undermine the prerogative of physicians to set their fees at the level they deem appropriate for the service rendered.

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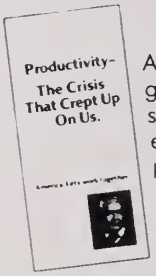

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The Price of Life: Ethics and Economics*

Executive Summary

The Board of the Minnesota Coalition on Health Care Costs has accepted the report and commends the Task Force's diligent work. The Coalition's Board is currently reviewing the recommendations of the Task Force for possible Coalition policy, direction, and implementation.

In November 1983, the Minnesota Coalition on Health Care Costs established a Task Force entitled "The Affordability of New Technology and Highly Specialized Care: Life at Any Price?" to examine the ethical and economic problems associated with medical technology. The Task Force separated these issues into two related categories. The first concerns the increasing frequency and complexity of bioethical dilemmas that are part of individual treatment decisions with which existing decision making mechanisms are ill-equipped to deal. The second problem concerns the health care industry's ability to provide more (and increasingly sophisticated) medical care, which, when coupled with an increasingly aging and chronically ill population, requires society to confront its limited health care resources.

This report focuses on the pressures for aggressive medical intervention that underlie these two problems and examines how these pressures may be moderated by the promotion of the patient's right of self-determination in treatment decisions, and by shifting emphasis away from sophisticated, expensive, and often merely life-prolonging technology, toward technology that improves access to health care, is cost-efficient, and preserves health.

Advances in medical technology, the emergence in medical decisions of the patient's right of self-determination, changes in the economic structure of the health care delivery system, and the recognition that many individual treatment decisions raise ethical as well as medical issues, are among the underlying conditions that contribute to the increasing frequency and complexity of bioethical dilemmas arising in individual treatment decisions. The Task Force explored three alternative decision making mechanisms to help patients, families, physicians, and other health care professionals better deal with these dilemmas. These decision making mechanisms are institutional ethics committees (IECs), guidelines, and legislation.

Institutional ethics committees, a relatively recent, grass-roots response to recurring ethical dilemmas, continue to evolve slowly as local needs dictate. They are multi-disciplinary groups within health care institutions specifically established to address the ethical dilemmas that occur within the institution.

The Task Force supports the continued voluntary establishment of IECs, and opposes, in principle, government regulation of the establishment, structure, and functions of IECs. Hospitals and other health care institutions should be encouraged to experiment to find the most appropriate structure and functions for IECs to meet the requirements of the institution and its patients.

Sets of guidelines for do-not-resuscitate orders, supportive-care-only orders, and treatment decisions for critically ill and handicapped newborns have recently been developed in Minnesota. These guidelines are general rules that define a range of accepted medical practice decisions, but are not meant to dictate decisions in particular cases. Guidelines delineate procedures to be followed and specify general substantive criteria for making treatment decisions in recurring ethical dilemmas.

The Task Force supports the development of guidelines for do-not-resuscitate orders, supportive-care-only orders, and treatment of critically ill and handicapped newborns, and for decision making in other treatment situations in order to help patients, health care professionals, and institutions better deal with difficult treatment decisions, to protect individual and familial autonomy, to promote high standards of medical care, and to safeguard the rights of all parties. Moreover, the Task Force

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*Report of the Task Force on: The Affordability of New Technology and Highly Specialized Care: Life at Any Price? (This was a task force of the Minnesota Coalition on Health Care Costs.

concludes that the current lack of national consensus on criteria and process for such treatment decisions requires that guidelines be developed locally so that they accurately reflect community values.

The Task Force explored possible legislative initiatives in two areas: 1) a definition of death and 2) living wills. The determination of death is critical to termination of life-sustaining treatment and many other medical decisions. Medical technology has created a situation in which traditionally recognized standards for determining that death has occurred are no longer always reliable or appropriate. In response, the Conference of Commissioners on Uniform State Laws and other national groups drafted a Uniform Determination of Death Act which recognizes that the determination of death will be made on the traditional cardiovascular criteria (in the vast majority of cases) but also provides clear criteria of brain death for the increasing number of cases where artificial life-sustaining treatment is used and direct evaluation of brain function is necessary. Currently Minnesota does not have a uniform brain death standard.

The Task Force recommends that the Minnesota Legislature adopt the Uniform Determination of Death Act. Minnesota laws should be updated to better reflect medical knowledge and experience, to eliminate uncertainty over the legal standard for death, and to minimize the threat and fear of litigation in cases that hinge on the determination of death.

Living wills authorize persons to control decisions regarding administration of life-sustaining treatment by executing a declaration to withhold or withdraw life-sustaining procedures in the event the person is terminally ill and is unable to participate in medical treatment decisions. The primary objective of living wills is to enable patients to direct care at the end of their lives; in particular, to enable them to choose less aggressive medical intervention. Instead of supporting legislation to recognize living wills, which the Task Force concludes does not adequately deal with the problems associated with treatment decisions made in the proximity of death, the Task Force recommends a broader educational approach to attain this objective.

To enable people to direct care at the end of their lives by assuring that decisions to forego life-sustaining treatment (and all other medical decisions) remain the decisions of competent fully-informed patients, and for incompetent patients are made on the basis of the patient's interests and desires, the Task Force:

1. encourages physicians to fully inform patients about prognosis and alternative treatments available;

2. encourages patients, families, physicians, and other health care professionals to discuss the issues surrounding life-sustaining treatment before the need for a decision arises;

3. encourages the participation of churches, synagogues, schools, and health and other social institutions in the discussion of attitudes regarding death; and

4. recommends the continued exploration of legal mechanisms to recognize and implement living wills or other "advance directives" created by individuals in which their preferences for medical treatment is indicated.

The second problem studied by the Task Force concerns limited health care resources and the inevitability of rationing these resources. The expanding demand for medical care, fueled by the growth of third-party coverage, and an aging and more chronically ill population, coupled with rising health care costs (principally due to increasingly technology-intensive medical care) have resulted in a medical industry that is outstripping our willingness and ability to pay for it.

The aging of the population, increased prevalence of chronic illness, and the increasing number of physicians are factors that have accelerated a confrontation with our limited health care resources. The pace of medical technology, however, is the prime accelerating factor. The tendency of the medical care system to bias the distribution of resources toward medical technology fosters the introduction each year of hundreds of new technologies. Moreover, the educational system in which physicians are trained, the structure of the reimbursement system in which physicians and hospitals are paid, and consumer demand encourage the relatively uncritical use of these technologies. Consequently, fully 30 to 40 percent of health care inflation is now due to the increased use and cost of medical technologies.

The technological imperative will push the development of new technologies beyond the point where we will be able to provide more technology than we can afford. Similarly, the aging of the population and the increasing prevalence of chronic disease will push demand for these medical services beyond society's ability to pay for it. This is the dilemma. In the very near future, we will be unable to provide optimal medical care to all people. The Task Force concludes that the rationing of health care resources is therefore inevitable.

The distribution of limited health care resources is guided by two principles: 1) no person should be denied potentially beneficial medical care on the basis of limited health care resources unless waste and inefficiencies have first been eliminated; and 2) society has an obligation to ensure equitable access to a "basic level of health care" to all people.

From the perspective of reducing our dependence on sophisticated, expensive, and life-prolonging technology, the Task Force explored three actions to reduce inefficiencies and thereby forestall the need to ration medical care. The first action is education, a necessary condition for the success of any alternative to reduce inefficiencies.

The Task Force recommends extensive programs on the part of government, health care institutions, and other major actors in health care, to educate health care professionals, employers, third-party payors, policy makers; and the general public about the reality of, and the need to deal with, limited health care resources. The education programs should focus on both the details of alternative actions to reallocate health care resources in order to slow the drift towards rationing, and on the ethical, social, legal, theological and economic issues associated with the allocation and rationing of limited resources.

The second action is prevention. The distribution of health care resources between treatment and prevention involves the fundamental choice of protecting life and health by treating patients once they have become ill, on the one hand, and preventing death and disease by keeping people healthy on the other. Based on the success and promise of public health and other prevention programs in cost-effectively improving the health status of the population, the Task Force recommends that the current bias against prevention and public health programs be eliminated.

The Task Force recommends the development of new, and the expansion of existing, prevention programs offered by employers, health maintenance organizations, and other providers and payers of health care. The Task Force also recommends increasing the proportion of health care expenditures by state and local authorities in Minnesota devoted to public health, especially in the areas of prenatal care and health education. And the Task Force suggests that employers, health care providers, and public and private third-party payers provide financial and other incentives to consumers to participate in prevention activities.

The third action involves the assessment of medical technologies. Assessments can improve the efficient use of limited health care resources by evaluating the safety and efficacy, as well as of the short- and long-term social, economic, and ethical consequences of emerging and existing medical technologies. Technology assessment can assist the developers, users, and payers of medical technologies in their decision making. Currently, many technologies, including expensive procedures such as bypass surgery, are not adequately assessed before coming into widespread use. This results in the significant consumption of resources by technologies of questionable efficacy and cost-effectiveness.

To promote the development and application of cost-effective health-preserving technologies, and to review existing health care technologies in order to identify and reduce the utilization of inefficient technologies, the Task Force recommends:

1. that comprehensive assessments to be performed of emerging and existing medical technologies;

2. the establishment of a national center, co-sponsored by organizations currently involved in technology assessment, to stimulate, coordinate, commission, and/or conduct assessments of emerging and existing medical technologies, and to widely disseminate the findings along with other information on medical technologies; and

3. that based on assessments of emerging medical technologies, research and development money from all public sources be targeted toward development and diffusion of

medical technologies that have the greatest potential to reduce costs, improve access to basic care, or enhance the quality of life.

Along with the elimination of waste and inefficiencies, limited health care resources must be allocated in the context of society's obligation to provide a "basic level of care" to all. In light of the complexity of the problems presented in defining a "basic level of care" and in delineating the system-wide mechanisms to provide such care, the Task Force outlines without recommendation two likely strategies to allocate limited resources.

The first strategy requires all public and private health plans in Minnesota to provide a uniform basic set of health care services and catastrophic coverage. Beyond this minimum, all health plans compete in the marketplace based on price, quality, and coverage options. The second strategy establishes, through capitation plans and budget limits for entitlement programs, the level of funds to be spent for health care for a population during a given period of time. This fixed budget is intended to provide the best level and mix of medical services for the resources available. The rationing of limited health care resources would be done by public and private health care plans operating under their respective fixed budgets.

These strategies are presented to promote debate and discussion over how society could meet its obligation to assure a "basic level of health care" to all.

The Task Force then examined three categories of medical treatment that crystalize the ethical and economic issues associated with medical technology.

1. Aggressive care of critically ill newborns is costly, but effective; it is also an area where a shift of resources to prevention holds the most promise. Neonatal intensive care involves continuous treatment for critically ill infants (230,000 annually in the United States). Advancements in neonatal intensive care have been instrumental in significantly lowering the survivable weight of premature infants (infants below 1000 grams are now routinely saved) and in reducing mortality rates for all infants. But these successes come with a cost. A severely handicapped premature infant saved by aggressive neonatal intensive care can incur not only substantial short-term medical costs but also costs for major medical problems requiring prolonged or repeated hospitalizations, and life-long institutional care.

Programs that identify pregnant women at high risk for premature birth and those that offer better prenatal care can reduce the incidence of premature birth, increase the chance of a healthy infant, and reduce the short- and long-term medical costs for premature infants. The potential savings are significant — between the 24th and 30th week of pregnancy the savings in neonatal intensive care costs alone is approximately $100 for every hour a baby remains in the uterus. Despite the proven benefit of prenatal care, many pregnant women, especially the poor, teenagers, and non-whites, receive prenatal care only late in the pregnancy or not at all. Programs that identify high risk women are similarly underutilized.

The Task Force urges renewed emphasis on the prevention of premature births — with particular focus on reducing the incidence of very-low-birth-weight infants. Specifically, the Task Force recommends:

1. that commercial insurers, Blue Cross/Blue Shield of Minnesota, health maintenance organizations, and all other third-party payers, provide coverage for comprehensive prenatal care in all health care policies and plans issued in Minnesota;

2. that the Minnesota legislature make appropriate statutory and regulatory changes to provide comprehensive prenatal care for all pregnant women in Minnesota who are not covered by private third-party payers;

3. that all public and private comprehensive prenatal care programs be tailored to address the particular problems of population groups that experience above-average incidence of premature births;

4. that all public and private comprehensive prenatal care programs contain financial and/or other incentives to promote their utilization, and

5. the development and adoption by health care providers and payers of screening programs to identify pregnant women at high risk for premature birth.

2. Financing transplants and distributing a limited supply of organs are the two major problems organ transplantation presents. Organ transplantation is the epitome of an insurable event: transplants are random, rare, their risk probabilities are measurable, and transplants are prohibitively expensive for most individuals. Despite some third-party payers' reluctance to cover organ transplants, for fear that continued progress in transplant technology will saddle them

with enormous expenses, the clear trend is toward including coverage for organ transplants in health care policies and plans.

A number of third-party payers include both quality and cost controls in transplant coverage, for example, by contracting with selected hospitals to perform transplants (based on the hospital's proven success rates for transplant procedures), and by prospectively paying the hospital a set amount for each transplant performed.

The Task Force concludes that the trend toward financing non-experimental organ transplants through insurance should continue. The Task Force recommends that organ transplant coverage in health benefit plans and policies include quality and cost control measures. The Task Force also recommends that coverage for organ transplants should remain optional for the group purchaser.

Second, the number of medically suitable candidates for organ transplants far exceeds the number of transplantable organs available. Thus, organ transplants present, in the starkest light, the need for rationing limited health care resources. The selection of organ transplant recipients is made according to established criteria and procedures at the hospitals and transplant centers performing the transplants.

The Task Force recommends that the rationing of transplantable organs involve three sets of criteria. The first level of selection should be made on the basis of a constituency factor, such as clientele and geographic boundaries. The pool of eligible patients would then be screened according to the probability of successful treatment, the quality of life for the patient, and how long that quality will continue. The final selection should be made on the basis of chance (either natural, such as "first come, first served," or artificial, such as a lottery). The development of guidelines for selecting organ transplant recipients, and their subsequent implementation and application, should be the responsibility of interdisciplinary groups within health care institutions.

3. The treatment of the terminally ill crystallizes many of the ethical and economic issues associated with medical technologies discussed in this report. The use of medical technologies that provide patients and physicians the ability to control or modify the circumstances surrounding the patients' death presents exceedingly difficult ethical questions. Compounding the complexity of treatment decisions for the terminally ill are the enormous resources devoted to those in the process of dying. One out of every seven health care dollars is now consumed by patients who are within six months of the end of life.

The above-cited recommendations on institutional ethics committees, guidelines, and "advance directives" are particularly applicable to the care of the terminally ill. Furthermore, promoting the patient's right of self-determination and reducing the emphasis on life-prolonging technology may significantly reduce the resources consumed by terminally ill patients.

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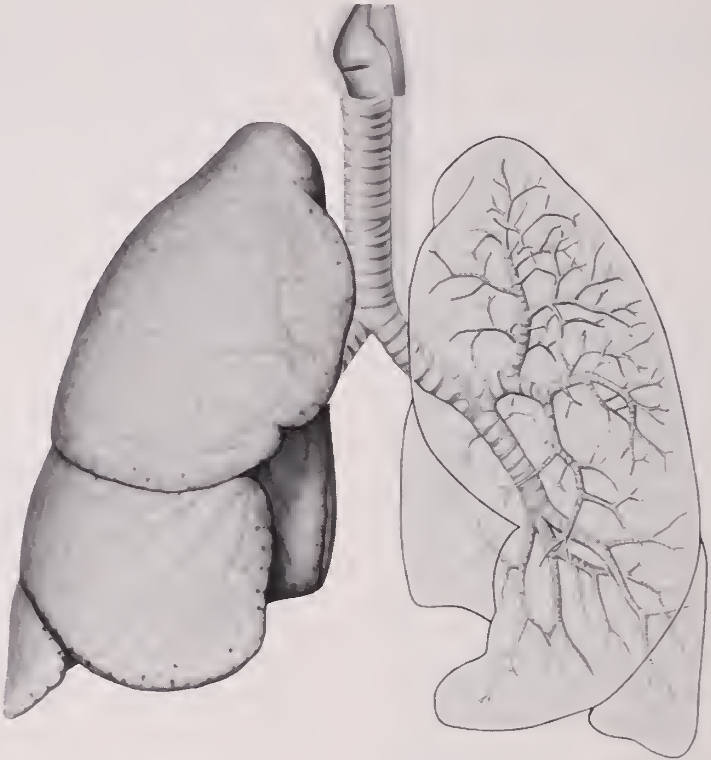
Dr. Donald Bell, Past-President, Minnesota Medical Association
Tom Swain, Executive Vice President, St. Paul Companies
Francis Giberson, Deputy Commissioner, Minnesota Department of Human Services
Robert Swanke, Secretary-Treasurer, Swanke, Inc.
Betty Bednarczyk, Secretary-Treasurer, SEIU Local 113
Robert Rynearson, ex officio, chairman, Minnesota Coalition on Health Care Costs
Staff: Reinhard Priester, Minnesota Coalition on Health Care Costs
James B. Kenney, Minnesota Coalition on Health Care Costs

Consider the causative organisms...



Ceclor®
cefaclor
250-mg Pulvules® t.i.d.

offers effectiveness against the major causes of bacterial bronchitis

H. influenzae, *H. influenzae*, *S. pneumoniae*, *S. pyogenes*
(ampicillin-susceptible) (ampicillin-resistant)

Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae) Haemophilus influenzae* and *S pyogenes* (group A beta-hemolytic streptococci

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN SENSITIVE PATIENTS CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS INCLUDING ANAPHYLAXIS TO BOTH DRUG CLASSES

Antibiotics including Ceclor should be administered cautiously to any patient who has demonstrated some form of allergy particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides semisynthetic penicillins and cephalosporins therefore it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases management should include sigmoidoscopy appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation When the colitis does not improve after the drug has been discontinued or when it is severe oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile* Other causes of colitis should be ruled out

Precautions *General Precautions* – If an allergic reaction to Ceclor® (cefaclor, Lilly) occurs the drug should be discontinued and if necessary the patient should be treated with appropriate agents e g pressor amines antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict s and Fehling s solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip USP Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease particularly colitis

Usage in Pregnancy – Pregnancy Category B – Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor® (cefaclor, Lilly) There are however no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response this drug should be used during pregnancy only if clearly needed

Nursing Mothers – Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18 0 20, 0 21, and 0 16 mcg/ml at two, three, four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor is administered to a nursing woman

Usage in Children – Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria and positive Coombs' tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and frequently, fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or va
(less than 1 in 100 patients)

Causal Relationship Uncertain – Transitory abnormal
clinical laboratory test results have been reported Altho
were of uncertain etiology they are listed below to serv
alerting information for the physician

Hepatic – Slight elevations in SGOT, SGPT, or alkalin
phosphatase values (1 in 40)

Hematopoietic – Transient fluctuations in leukocyte
predominantly lymphocytosis occurring in infants and yo
children (1 in 40)

Renal – Slight elevations in BUN or serum creatinine (l
1 in 500) or abnormal urinalysis (less than 1 in 200)

[0

Note Ceclor® (cefaclor, Lilly) is contraindicated in pati
with known allergy to the cephalosporins and should be
cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatmen
prevention of streptococcal infections, including the pro
of rheumatic fever See prescribing information

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40044'

The Price of Life: Ethics and Economics

Critique of the Report Issued by the Minnesota Coalition on Health Care Costs

DONALD C. BELL, M.D.*

The Minnesota Coalition on Health Care Costs has completed a year-long series of meetings pertaining to the general subject of medical technology and its relationship to the cost of medical care and has issued a report under the name "The Price of Life: Ethics and Economics." To accomplish this study the Coalition assembled a group of people who were considered to have high competence in various fields who would predictably have knowledge in, or an interest in various aspects of this complex subject. Eighteen people participated. Included were high officials of the Departments of Health and Public Welfare, heads of various foundations, business groups, a supreme court justice, a hospital trustee, a college president/theologian, etc. I was one of two physicians involved and the only one in active practice.

As a participant in this project, and being appointed to represent the medical profession in general and the MMA in particular, it is my desire to make known to the MMA membership my thoughts about the project itself, the process that was followed, and the conclusions that were reached. I find myself to be in opposition with much, but certainly not all, of the report. I do not presume that this constitutes a "minority report", but rather is an expression of my own personal thought and reaction to this paper on the subject of medical technology and the effect that it is having on our society.

I regard the effort that was made by this group to be a very important one from more than one perspective. First of all, it was a major effort on the part of the Coalition, and likely will constitute policy or at least influence the policy of that group which is very influential in our area at this time as relates to health care planning. Secondly, the media is almost certainly going to refer to this report as a standard for thinking about medical technology and the ethical basis of its use. Thirdly, the Legislature will certainly be made aware of this report and will perhaps use the opinions expressed as the basis for formulating legislation. Most importantly for us, the subject matter itself and the manner with which this paper deals with it is central to the very existence and future of the medical profession.

Process

Following are some observations on the process used in this project which I feel are pertinent in putting the report in perspective.

1. The Committee, while drawn from a wide variety of disciplines, did not function as a fundamental source of the agenda but rather was used as a responder or sounding board for a preset agenda that was drawn up in considerable detail by the staff of the Coalition and the chairman. This agenda appeared in the form of a report issued to the Committee by staff at the first meeting. The basic tenets of this document were never discussed by the group per se.
2. There were no votes allowed by the chairman as the Committee proceeded, but rather the minutes reflected in considerable detail the many remarks made by participants without clear decisions being made by the group.
3. As a result, (in my opinion) the real potential value of this group as a resource was not fully tapped. Much of the dialogue took place between the chairman and various

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*Member of the Task Force "The Affordability of New Technology and Highly Specialized Care: Life At Any Price".

members. Frequently, the chairman would negate a certain idea (or support it) without allowing a group decision to be made.

4. Much of the agenda consisted of outside speakers who would supply information about certain medical technologies. The opinions of the group members were not solicited in depth except as they would volunteer in the process of questions and answers to these presentations.
5. Some of the content of the final report was not discussed by the Committee in session.

Anti-Technology Tone

It is my feeling that the paper is anti-technology in tone and content. It seeks to trivialize medical technology. The following are examples of text to support this contention:

1. The stated central theme is to moderate the pressure for aggressive medical intervention. (This is not apparently confined to isolated high technology areas.)
2. Medical technology is a ''personal, spiritual, and emotional burden.''
3. Medical technology has developed because of a fascination with ''complex and costly medical machines.'' This then stimulates the further development of such technology.
4. The paper seeks to promote technology that will increase the quality of life and to minimize or block the development of technology that ''prolongs the process of dying.''

Comment: It is my view that the group did not really discuss fully or understand the profound implications of abandoning the application of sophisticated technology to the care of the sick. I also feel that to try to divide technology into such categories as proposed is naive and simplistic to an astounding degree.

Emerging Individualism

The paper lauds an ''emerging individualism'' as being a new and creative force in medical decision-making but is highly selective in the setting in which this individualism is to be applied.

1. It denounces the current individual treatment and decision-making mechanisms in medical care. It states that these mechanisms are ill-equipped to deal with ethical dilemmas.
2. Conversely, it promotes individual treatment decision making at the time of approaching death. It apparently assumes that these decisions, when the people involved are fully informed, would usually be in favor of no treatment. (This is contrary to my own experience as a physician.)
3. It paradoxically cites individual decisions to not seek care when pregnant to constitute a societal burden — to be corrected by statuatory and regulatory means (p.46) — while it denounces the individual decisions of people who have severe coronary disease with angina to have revascularization surgery as also being a societal burden.
4. It ignores the fact that individualism has been in vogue right along. Many people choose no care at all, even when they can well afford it. Many (most?) people alter the treatment programs that their doctors recommend, sometimes drastically. No doctor is without the problem of poor patient compliance.

Comment: The subject of individualism was not in my opinion really discussed at our meetings except in the context of promoting individual decisions to discontinue treatment in those situations in which there is not meaningful hope of help, a situation in which there is no real problem now other than the fear of legal retaliation against those who make the decision to halt treatment. The paper does not clearly limit its consideration of individualism to this setting, but rather implies that the entire process of medical decision-making needs revision.

Technology Assessment

The paper recommends an expansion of the concept of technology assessment to entail factors of economic impact, ethical implications and enhancement of quality of life by a given technology. It recommends also that such enhancement become a centralized governmental function.

Comment: The government also will be busy educating all of us about the health care cost problem. It is to educate the health care planners as well. (Since most of these planners are a part of the government, this would seem to consitute the government educating itself.)

It is difficult to imagine anyone urging and promoting the health care industry to have the same kind of planning process and efficiency rating that has been achieved in the area of military procurement and planning!

High Cost Technology

The paper cites neonatal care, transplant surgery, and coronary artery surgery as being examples of the "uncritical use of technology."

Comment: The "uncritical" nature of technology use is a subjective opinion of the paper's authors which the paper itself does not justify. In the case of coronary artery surgery, the group heard no testimony regarding this subject. This is also an excellent example of showing only one side of the equation. There is no acknowledgment of the fact that cardiac revascularization surgery restores many people to productive lives, including the paying of taxes from their income, which taxes will help to repay the money that was consumed by society in their care.

There also is a glaring contradiction in this matter in that the paper promotes technology that improves the quality of life and condemns that which merely prolongs life, yet it condemns this type of surgery because it does not prolong life but merely helps to improve angina. Apparently, disabling angina is not to be regarded as detrimental to the quality of life.

Rationing of Health Care

The paper states that rationing of health care is inevitable. It seems to be fundamentally opposed to rationing and seeks to postpone it by calling for the elimination of all inefficiencies in the delivery of care prior to the starting of a rationing process. It refers to the differential allocation of available livers for transplant surgery as being "stark reality" but then goes on to recommend a policy that differs little from those policies already being used by transplant centers.

The paper seeks to distinguish between rationing and allocation. (This is a distinction that makes little real difference in the end result.)

The paper bemoans the "jerry-built system" we now have for distributing health care resources. (This system has been built on individual responses to individual needs — the epitome of individualism, it would seem.)

The paper seeks to distinguish between "protecting life and health through treatment" (presumably bad) and "preventing disease and death" (presumably good) — a distinction that has considerable opacity.

The paper distinguishes between "equal access to care" which it declares to be unattainable and "equitable access to care" which it feels is achievable. It goes on to explain that the latter term is synonymous with "basic" care. (The vagueness of these concepts will have to be removed before doctors will be able to decide which patients to turn away.)

Comment: The irradication of all waste in the area of taking care of sick people will remove most of the humanism entailed in this care. If *you* and *your* illness do not lie in the average or common area of experience, certainly for society to chase after *your* problem is inefficient!!

Basic Level of Care

The paper adopts the concept of ''basic medical care'' which was promoted by the President's Commission on Health Care Costs (substituting the word ''basic'' for the word ''adequate'' without changing the meaning of the concept. It decries the current practice of making medical decisions based on what it calls the ''fixed though imprecise directive of 'medically necessary.' '' It proceeds to define the basic medical care in marketplace and economic terms that have no clinical correlation. It seems to be lost to the authors that ''medical necessity'' is in fact individualism while paradoxically the ''emerging individualism'' promoted by this paper would have individual treatment decisions governed by group economics.

Comment:

1. **This would appear to mean that penile implants and breast augmentation surgery, if they passed the test of a fully informed patient feeling that the price is right, would become ''basic medical care.''**
2. **Physicians are not included amongst the list of those who would decide what the basic level of care is to be. Elected officials head the list.**

Preventive Health Care

The paper declares that there is a ''bias against prevention'' amongst the medical practitioners and the developers of medical technology today.

Comment:

1. **This is an astounding accusation and one that really should call for public explanation and even apology by the writers of this paper. Certainly, no such proposition was discussed in the meetings of this group that I attended. The record of medical science stands as one of the highest of human achievements. It needs no defense to the rational mind.**
2. **It would needlessly lengthen this paper to try to list the preventative triumphs such as the elimination of smallpox, the reduction to the status of medical rarities of tuberculosis and polio amongst large segments of the population, the rehabilitation of the disabled through artificial joint surgery, the marked reduction in occurrence of serious peptic ulcer disease through the use of H_2 blockers, as well as the 40% reduction of strokes in the past decade through the widespread control of hypertension — which the paper itself mentions but does not apparently regard as prevention — are just a small sampling.**

High Cost Users

Several categories of illness are identified in the paper as being high cost, and people afflicted with these illnesses are identified as ''high cost users.'' These include spinal cord injuries, cardiovascular diseases, etc. The fact that a high percentage of our health care expenditures are spent during the last years of life is also pointed out. These facts are clearly identified as a societal problem. (''A small number of high cost technologies allocated to a small number of people'' and are identified as ''problems of distribution.'')

Comment:

1. **The point is missed by the authors that these services are available to whomever needs them. If those who hold this opinion should suffer a spinal cord injury in an auto accident, the services would be available to them. They thus would join the ''small number'' who are ''privileged'' to receive such services. Naturally if they do not need these services, there will be no such distribution in their favor.**

2. **We traditionally have sought to combat disease and illness in each person as it becomes manifest and have not abandoned the sufferer along the course of illness. To do otherwise as is suggested in this paper would be morally reprehensible, and also illegal.**
3. **We are unable to identify the terminal year as we enter it, but only in retrospect. Furthermore, many times that which appears likely to be a terminal course is dramatically reversed by the use of technology that this paper abhors.**
4. **In a paper that lauds individualism, it is strange to read that to offer maximal individualized therapy is socially unacceptable. (Or to be so declared in the near future.)**

DNR Orders

The paper seeks a limitation on resuscitation procedures and questions the current decision-making processes by which DNR decisions are made. It takes the position that large numbers of brain damage people live for long periods of time after partially successful resuscitation procedures, thus constituting a major burden on society.

Comment:

1. **No testimony was given to support this position.**
2. **The paper does not mention the significant salvage of normally functioning human beings which is achieved by resuscitation procedures.**
3. **The paper does not address the common situation in which the patient expressly wishes to be resuscitated even when there is no hope in the opinion of the physician of ultimate recovery from his/her illness.**

Institutional Ethics Committee

The paper supports and encourages the recent development of ethics committees in each institution to deal with ethical problems as they arise in the delivery of medical care to patients. It accurately reflects the group's concern that these committees could quickly replace the physician and patient as the prime decision makers in each case that presents any type of ethical problem. Also it was mentioned in our discussions that legal pressures would soon bureaucratize these committees as they function in the hospital medical staff.

Comment: In the discussion section pertaining to ethics several points are made that are worth pointing out as reflections of the general tone of this paper.

1. **Physicians are generally untrained in the area of ethical matters and are actually fearful of decision-making in the area of ethical matters as they apply to patient care. (This statement may have arisen from my own comments that physicians should not be the rationing agent for their patients' medical care — that this makes them double agents.)**
2. **The paper states that "Bioethical dilemmas raise questions about the process and criteria for individual treatment decisions and *about those who make those decisions*!!!" (Emphasis Added) — to identify the problem is by innuendo to hold in suspicion those who try to deal with it.**
3. **The paper states that the complexity of ethical issues makes treatment decisions difficult — that economic issues do not (p. 2). (I believe that the reverse is true. If it were not for the economic pressures, we would not have the ethical dilemmas created by withholding treatment for monetary purposes.)**

Definition of Death

The paper supports legislative measures to define death.

Comment: This is current MMA policy.

Supportive Care Guidelines

The paper supports the concept of supportive care guidelines, but shies away from supporting the Ad Hoc Task Force on Supportive Care's recommendations which are being blocked by groups who regard the potential implementation of such guidelines as being a step in the direction of euthanasia for the handicapped.

Comment: Here we had a chance to have a practical impact in favor of these guidelines which would be useful for nursing homes and others. There again, no votes were taken, and thus no group decision regarding this matter.

Conclusions

The paper commissioned by the Minnesota Coalition on Health Care Costs pertaining to the effects of high cost medical technology on society is an important effort which is intended to promote a dialogue about this difficult subject. Unfortunately, in my judgment, the product of this effort is less effective than it might have been by virtue of the fact that it does not deal realistically with the main subject under consideration — medical technology and the broader field of medical care.

Medical care is, I believe, the most complex of human services. Technology is not some fascinating toy to be used at someone's whim or not used by virtue of political directives, but rather an integral part of the effort to improve the health of each individual who is ill and to prevent illness whenever possible.

Any meaningful or effective effort to change the basic elements and directives of our medical care systems should start with a realistic understanding and appreciation of the role that medical technology plays in the care of sick people. It also should entail recognition that the attitudes of sick people toward medical technology are frequently different from the attitudes of the same people prior to becoming ill, and the fact that medical care and technology are an integral part of our economy as well. It is not some extraneous burden placed on the back of society as is implied in the Coalition document.

Demeaning medical technology, leaving out the entire half of the equation that constitutes the restoration of humans to health and productivity and holding in contempt and suspicion those people who have made it their life's work to deliver this knowledge and technology to the public cannot be part of any **constructive** effort to deal with the cost problem that we collectively face.

I strongly urge each doctor to take the time necessary to obtain this document and read it for him/herself and form their own conclusions. It is my opinion that this report represents the point of view of a group of activists who intend to use it in the process of their effort to significantly reduce the intensity with which we treat our sick people.

If we intend to have any voice at all in this matter, we must speak up!!

Eighth Annual Black Hills Seminar

The Eighth Annual Black Hills Seminar on Advances in Clinical Pediatrics — June 19, 20 and 21, 1985, at Sylvan Lake Resort, Custer, South Dakota, sponsored by the Department of Pediatrics and Adolescent Medicine, University of South Dakota School of Medicine. Guest faculty include Drs. James C. Overall, Frederic Silverman, Alvin Jacobs, Kenneth Jones and Jon A. Vanderhoof. For complete conference information, contact:

Lawrence R. Wellman, M.D., Program Coordinator, USD School of Medicine, 1100 S. Euclid, P.O. Box 5039, Sioux Falls, South Dakota 57117-5039, 605-333-7178.

Letters to the Editor

Dear Editors:

I have had an opportunity to review Dr. Bell's comments concerning "The Price of Life — Ethics and Economics," the report of the Task Force which I chaired. Dr. Bell, in addition to being my St. Olaf College classmate and my personal physician, is a physician of unusual dedication and devotion to the cause of excellence in medicine. While circumstances prevented Dr. Bell from attending the critical last four meetings of the Task Force, where the final report was generated and approved, he was a valued and contributing member in the work leading up to the final draft. It is obvious that he has some deeply held views which he believes the Task Force report violates, although I am not sure even after rereading his comments just exactly which Task Force proposals violate these views. Nor am I sure what his substitute recommendations would be.

He and I do agree that everyone should read the report, since that is the best way for anyone to judge the substance of Dr. Bell's charges concerning the tone, intent, and content of the report. I believe Dr. Bell's charges are misdirected, but only the reader is in a position to render judgement. I do know what the intent of the report is — the only question in my mind is whether the written language carries out the intent.

The report is not anti-technology and expressly says so. It does (I think correctly) point out, particularly with advent of the artificial heart, that our society will have to confront questions that have never before arisen in the history of medicine. These are major problems which can be avoided, muddled through, or faced squarely. The Task Force, like the rest of mankind, "looks through a glass darkly" but, while recognizing that trend is not destiny, the continued growth of high-tech medicine puts Minnesotans and all Americans face to face with questions never before faced by any people.

The Task Force is not anti-doctor, and the report does not in any way, neither in text nor between the lines, so indicate. Doctors are increasingly facing the ethical choices arising out of the economics of high tech medical practice. There is nothing in the report to indicate that they are not facing the problems professionally and well. However, the evidence before the Committee overwhelmingly indicated that the medical profession recognizes that it needs help wrestling with these dilemmas. The spontaneous rise of institutional ethics committees, with full medical participation, can be cited.

I am afraid that Dr. Bell's apparent deep feelings on the subject of the Task Force have led him into some unfortunate misquotes from the text of the Task Force report. For example, in reviewing his comments and the actual report, we find Dr. Bell's statement that a medical technology is a "personal, spiritual, and emotional burden," does not exist in any shape or form in the report. Rather, the report states, "The cost of aggressive treatment is often too high, especially when personal, spiritual, and emotional, as well as economic costs are considered."

I think the report is significant since it goes beyond the conventional dialogue of committees studying the subject. The Task Force report predicts that despite our best efforts the explicit rationing of health care is inevitable, and goes on to discuss where the rationing decision should be made, how it should be made, by whom it should be made; all done in terms of general principles and in a tentative form, but firmly believing that the dialogue must start somewhere. Verities about the glories of the past or the greatness of present-day medicine are hardly an antidote for an uncertain future.

I make only a few brief comments concerning Dr. Bell's apparent dissatisfaction with the process and procedures of the Task Force; an internal issue which, I take it, should not unduly concern the general reader. For example, the Task Force members might, I suppose, be classified as "activists" (Dr. Bell's term). If the term is meant to be pejorative, he's got the wrong bunch. If he means to indicate that the people involved have by their proven active civic records and professional and personal accomplishments merited a right to sit, ponder, think and expound on one of the more difficult of society's problems, I wholeheartedly agree.

Any weaknesses of leadership and the Task Force's procedural inability to respond to what Dr. Bell thinks is the proper way to run a committee have been, and remain, the personal fault of the chairman, who, like most people, wishes he could do better; perhaps he will next time.

The medical profession should note that except for the Uniform Determination of Death Act, also endorsed by the Minnesota Medical Association, the report doesn't call for any federal or state legislation. The Task Force believes this is not an area where you can get a quick fix by passing a law. Accordingly, the report calls for focusing community attention, debate, discussion and dialogue on matters of life and death. It is the Task Force view that these matters continue to deserve the entire community's attention, as well as that of the medical profession (which has been immersed in the issues longer than the rest of us).

David L. Graven
Chairman

Task Force on:
The Affordability of New Technology and
Highly Specialized Care:
Life at any Price?

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Dear Editors:

The Shoebox Bassinet: Neonatal Transport Circa 1914

Who rides there so late
Through night so wild
A loving father
And his young child
Goethe

The letter was addressed to the medical records department at the University of Minnesota Hospitals. The writer, a woman now 70 years old, was seeking information about the hospitalization following her premature birth in the year 1914. The request itself was not unusual, but extraordinary was the fact that this infant had traveled to the hospital by a most unique transport system. She had been carefully carried there by her father in a shoebox.

In the letter, she wrote: "I was born near Monticello, Minnesota, prematurely on August 1, 1914. Two days later my father put me in a softly lined shoebox, rushed to the Great Northern Railway, and brought me to the University Hospitals in Minneapolis. There I was placed in an incubator and remained in the hospital for five months."

The medical record revealed the following admitting information written by the Pediactric intern: "The baby was born at seven months gestation, August 1, 1914, twin birth, both girls. One infant died shortly after birth, cause unknown. The other was brought to the hospital August 3. General inspection: Small and atrophic infant with a distinct senile countenance. The masculature is of poor development and the normal rounded contour is wanting. The scalp is covered by a considerable amount of long dark hair, and the face shows many lanugo hairs. The bony prominences are quite evident. The ribs are very prominent, but there is no rachitic rosary or Harrison's grove." The infant was hospitalized until late December, 1914. During this time she gained weight and progressed developmentally without benefit of the vast armamentarium available to present day neonatologists.

The unusual circumstances surrounding this birth and trip to the hospital prompted me to call her. In a vibrant voice she expressed pleasure at hearing from me and proceeded to confess to being several pounds overweight, but otherwise in reasonably good health. She then related that since 1910 her family had lived on a farm where her mother regularly did chores, even while seven months pregnant. One day when feeding the animals, a pig suddenly bolted, knocking her mother to the ground. Shortly thereafter, contractions began. The family doctor was called and twin girls were born. One died within hours; the physician offered little hope that the other would live. Despite the grave prognosis, she did survive the first day. Her father then quickly decided to seek further medical help. He gently placed the tiny baby, whose weight was barely three pounds, in a shoebox which he put under his arm, caught the train to Minneapolis, and brought her to the hospital.

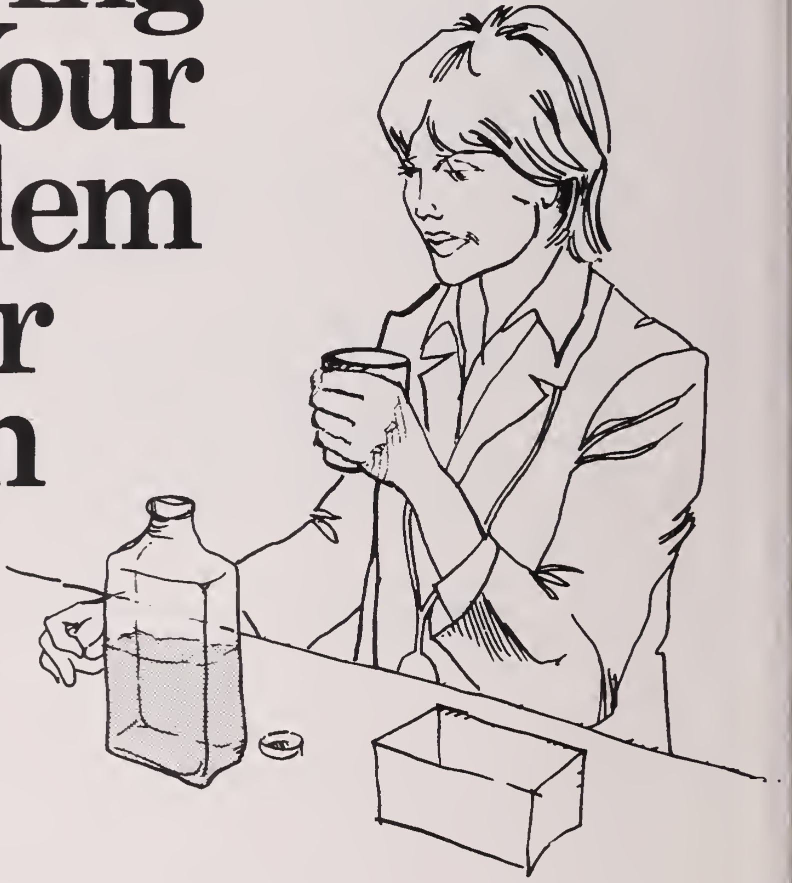
We are sometimes fortunate enough to glimpse a special episode in another's life which helps to make us aware of the indomitable spirit of individuals from an earlier generation. It was a privilege and delight to learn about this woman and her remarkable shoebox journey as a newborn.

Leon Satran, M.D.
Assistant Professor
Pediatrics Ambulatory Care
University of Minnesota

Message to:

The Physician With An Alcohol Probler

Solving Your Problem is Our Concern



THERE IS AN ANSWER.

For confidential help call Physicians Serving Physicians (PS
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A program sponsored by the Physicians Philanthropic Foundation of the Minnesota Medical Asso

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

ANUARY, 1985

5 Infectious Diseases; University of MN, Office of CME; Min-apolis; CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 laware St. SE, Mpls MN 55455; 612/373-8012

EBRUARY, 1985

-2 Advances in Endourology; University of MN, Office of CME; inneapolis; CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 20 Delaware St. SE, Mpls MN 55455; 612/373-8012

-8 Clinical Gastroenterology, 1985; Mayo Clinic/Mayo Foundation; laui Marriott Resort, Maui, Hawaii; CONTACT: William L. Nietz, layo Clinic, 200 First St. SW, Rochester, MN 55905 507/284-2085.

-9 Northwestern Med. Association-40th Annual Meeting; CME, niv. of MN Medical School; Sun Valley, Idaho; CONTACT: Bart W. alle, Ph.D., Interim Director, Box 293 Mayo Mem. Bldg., 420 Del-vare St. SE, Mpls., MN 55455, 612/373-8012.

Burn Care Update — 1985; St. Paul Ramsey Medical Center; Rad-son Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 2/221-3980.

8-22 Current Problems in Cardiovascular Diseases; Mayo Clinic/ layo Foundation; Walt Disney World, Hotel Royal Plaza, Lake Buena ista, FL; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. SW, ochester, MN 55905 507/284-2085.

2-23 Pediatric Update for Primary Care Physicians; Univ. of MN edical School and St. Paul-Ramsey Med. Center; St. Paul, MN; CON-ACT: Ruth K. McIntyre, 612/221-3980.

3-March 2 Office Management of Common Orthopaedic roblems; Minnesota Medical Association and Minnesota Orthopaedic ociety; Sheraton World, Orlando, FL; CONTACT: Eugenia C. Kassar, irector, CME & Meeting Services, MMA, 612/378-1875.

7-28 Topics in Geriatric Medicine: Drug Therapy Symposium I; University of MN, Office of CME; Radisson, St. Paul; CONTACT: niv. of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, lpls., MN 55455; 612/373-8012.

MARCH, 1985

1-2 Annual Women in Medicine Symposium; University of MN, Office of CME; Minneapolis; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

2-6 Advanced Clinical EMG; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW Rochester, MN 55905; 507/284-2085.

2-9 St. John's Hospital Winter Seminar; St. John's Hospital; Vail Village Inn, Vail, CO; CONTACT: Margo Moseng, 403 Maria Ave., St. Paul, MN 55106; 612/228-3129.

6-9 Third Annual Critical Care Conference; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

13-15 MAFP Spring Refresher-House of Delegates Meeting; MN Academy of Family Physicians; Radisson South Hotel, Bloomington; CONTACT: Chari Konerza, MAFP, 2221 University Ave. SE, Suite 426, Mpls., MN 55414; 612/623-9559.

16 Aggressive Management of Type II Diabetes Mellitus; American Diabetes Association, MN Affiliate and Mount Sinai Hospital; L'hotel Sofitel, Mpls.; CONTACT: Victor Corbett, M.D., Symposium Co-Chairman, American Diabetes Association, 3005 Ottawa Ave. So., Mpls., MN 55416; 612/920-6796.

22 Emotional Trauma in Emergency Medicine; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

27 BME Workshop — "The Patient and the Practitioner: Personal Morality and Public Policy"; MN Interreligious Committee for Bio-Medical Ethics: Minneapolis, MN; CONTACT: Trudy Rogness Jensen, Chair, 4420 Philbrook Lane, Mpls.,MN 55424, 612/922-3537

28-30 Cardiopulmonary Medicine Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

APRIL, 1985

1-2 Annual Ophthalmology Specialty Course, "Glaucoma: Mechanisms and Management"; Dept. of Ophthalmology and Office of CME, Univ. of MN Med. Sch.; Holiday Inn Downtown, Mpls., CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

(April continued)

11-12 Third Annual OB/GYN Update; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

11-13 Allergy and Clinical Immunology; University of MN, Office of CME; Mayo Memorial Auditorium, Minneapolis; CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

12-13 Colorectal Problems for Primary Care; University of MN, Office of CME; Hyatt Regency, Mpls.; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

12-13 Eating Disorders; University of MN, Office of CME; Earle Brown Center, Univ. of MN, St. Paul; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

13 Spring Scientific Meeting; Minnesota Society of Anesthesiologists; Hilton Inn, Minneapolis; CONTACT: Secretary, MN Society of Anesthesiologists, 200 First St. SW, Rochester, MN 55905; 507/286-8701.

13 MSCP Spring Seminar; Minnesota Society of Clinical Pathologists; Hyatt Regency, Minneapolis; CONTACT: Pam Lindberg, MMA, 2221 University Ave. S.E. — 400, Mpls., MN 55414, 612/378-1875.

15-19 Family Practice Review: Update 1985; University of MN, Office of CME; Radisson, St. Paul; CONTACT: CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

18-19 Pediatric Days; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

19-20 8th Annual Clinical Update in Practical Cardiology; Abbott-Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, 800 E. 28th St., Mpls., MN 55407, 612/874-4300.

22-26 Diagnostic & Therapeutic Concepts in Clinical Endocrinology, 1985; American College of Physicians; Mayo Clinic; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

26 New Technology in Medicine; The Duluth Clinic, Ltd.; Fitger's Inn, Duluth, MN; CONTACT: J.G. Brueggemann, M.D., 400 East Third St., Duluth, MN 55805; 218/772-8364.

26-27 Frontiers in Medicine; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Public Relations, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3062.

26-27 Ophthalmic Reviews — 1985; Mayo Clinic/Mayo Foundatio Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rocheste MN 55905; 507/284-2085.

MAY, 1985

1-3 Pulmonary Function Testing Workshop; St. Paul-Ramsey Medical Center; St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

2-3 Health and Addiction; University of MN, Office of CME; Sain Paul Hotel; CONTACT: Office of CME, University of MN, Box 29 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

3 Antiviral Therapy; University of MN, Office of CME; Radisso University, Mpls; CONTACT: Office of CME, Univ. of MN, Box 29 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

3 ENT in Primary Care; St. Joseph's Hospital; St. Paul; CONTACT Judy Stroebel, Pub. Relations, 69 West Exchange St., St. Paul, MN 55102, 612/291-3062.

6-10 Practice of Internal Medicine — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW Rochester, MN 55905; 507/284-2085.

18-21 Impact of Modern Perinatal Care on Society, 15th Annua Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, Mpls., MN 55455, 612/373-5718.

19-20 Heart Attack Prevention Workshop; University of MN Office of CME; Marine on St. Croix, MN; CONTACT: Office of CME University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 612/373-8012.

21 Gynecologic Oncology; University of MN, Office of CME; Radisson University, Mpls; CONTACT: Office of CME, Univ. of MN, Bo 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

22-24 Current Concepts in Radiation Therapy; University o MN, Office of CME; Mayo Memorial Bldg., Minneapolis; CONTACT University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE Mpls., MN 55455 612/373-8012.

AUGUST, 1985

1-4 Second Annual St. Paul-Ramsey Trauma Conference; St. Pau Ramsey Medical Center; Fox Hills Resort, Mishicot, WI; CONTACT Ruth K. McIntyre, 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Minnesota Medicine's Physician Announcements

If you are anticipating any of the following:

- Changing your address
- Adding new associates
- Listing your specialty
- Announcing new procedures/services
- Specialty referrals

space is available in MINNESOTA MEDICINE for advising MMA members of any of the above (or other announcements) at $27.00 per column inch per listing. The minimum order is for a 3-time consecutive listing. No changes will be made in the copy once the announcement is set in type. Advance payment must accompany the first month's insertion. All announcements will be in bold face type.

Here is an excellent opportunity for providing information or announcing changes in your medical practice to the entire medical community.

1″

T.B. Announce, M.D.
announces the relocation of his practice
to
1800 Vine Avenue
Central, Minnesota 55803
(507) 222-0000

3″

2″

Main Clinic, P.A.
Five specialists in the diagnosis
and treatment of neurologic diseases

1899 Main Avenue
Minneapolis, Minnesota 55100
(612) 800-1000

Certified by the American Board
of Psychiatry and Neurology

3″

3″

Middletown Clinic
a ten-physician multi-specialty
group announces that:

John Doe, M.D.
certified by the American Board
of Orthopaedic Surgery,
has joined the practice located at

1111 Elm Street
St. Paul, Minnesota
(612) 999-9999

3″

Send copy for listings with first month's payment to: Minnesota Medicine, 2221 University Avenue SE, Suite 400, Minneapolis, MN 55414. Deadline is the 10th of the preceding publication month.

Classified Advertisements

Classified advertising rates are forty (40) cents a word: minimum monthly charge $10.00, key number. $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine. 2221 University Ave. S.E., #400, Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

INTERNIST-NEPHROLOGIST, INTERNIST-GASTROENTEROLOGIST, INTERNIST-GENERALIST — Sought for multispecialty group practice in Northern Minnesota. New 175 bed hospital with dialysis unit, full diagnostic services and support facilities. Nationally acclaimed school system and broad range of recreational facilities. Excellent opportunity for aggressive internist. Liberal compensation system. Excellent fringes. Telephone calls will not be accepted. Send curriculum vitae to: John Brust, Mesaba Clinic, 1814 14th Avenue East, Hibbing, MN 55746.

WANTED: Young family practitioner to join a ten physician group in western Wisconsin. Contact R. M. Hammer, M.D., River Falls, Wisconsin, 54022. Telephone (612) 436-8809 or (715) 425-6701.

OPHTHALMOLOGIST, NEUROLOGIST — Otolaryngologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

FAMILY PHYSICIAN needed for a 5-physician group in a growing suburb in the metropolitan area, offering amenities of both cosmopolitan and rural life-style. Very competitive compensation and benefits. Contact Jeff R. Michell, M.D. or Gloria Vierling, Business Manager at 612-445-6440 in SHAKOPEE, MINNESOTA 55379.

LUXURY HOUSE for rent in Aspen, Colorado, 4 BR, 2½ bath; located within minutes of five ski areas; on private lot overlooking Roaring Fork River, exceptionally furnished; with all amenities, stereo, color T.V., hot tub, fire places, etc. Contact Dick Huffman at 546-1555.

WANTED: OB-GYN, family practitioner and internal medicine to join multi-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent. Many fringe benefits included. Write MINNESOTA MEDICINE (742) 2221 University Avenue, S.E., Suite 400, Minneapolis, Minnesota 55414.

PEDIATRICIAN NEEDED by Marshfield Clinic to join primary care satellite in Ladysmith, Wisconsin. Current Ladysmith staff includes five family practitioners, four internists, one general surgeon, and a radiologist. An obstetrician will be joining the group in 1985. Clinic adjoins 41 bed JCAH accredited hospital. Rural location in beautiful northern Wisconsin. Must be board eligible or certified. Send curriculum vitae to Dr. John Ziemer, 906 College Avenue West, Ladysmith, Wisconsin, 54848, or call 715/532-6651.

FAMILY PRACTITIONER WANTED to join group of Boarded Family Practitioners, practicing real family medicine with full hospital privileges. H.M.O. setting in Metropolitan Milwaukee. Very competitive salary and benefits. Please reply: James Chaillet, M.D., Medical Director, Family Health Plan, 12500 W., Bluemound Road, Elm Grove, WI 53122. (414) 786-3338, Ext. 451.

FAMILY PRACTICE PHYSICIAN needed for rapidly growing multi-specialty clinic. Outstanding opportunity, good salary and excellent benefits. Clinics are located in the northern suburbs with easy access to both Minneapolis and St. Paul. Three satellite clinics are located within a 15 mile radius of the main Clinic. For more information, contact Vivian Hoese, Administrator, Multi Care Associates of the Twin Cities, 7675 Madison Street N.E., Fridley, MN 55432, (612) 786-2700.

WANTED: One or two internists to join solo internist. Write: Internist, Box 1161, St. Cloud, MN 56302.

Orthopaedics: State-of-the-art equipment and full support of entire community's medical staff make this opportunity particularly attractive in our service area of 45,000. Currently, our community does not have an orthopaedic surgeon. However, coverage will be provided upon your decision to relocate. Area also provided excellent recreational activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Family practitioner – Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

Family practice — A progressive community located in scenic northern Wisconsin offers a variety of recreational and practice opportunities. A family practitioner is definitely needed, and we offer financial backing and guarantees. Our area provides an excellent education system for your family. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

East range clinics, Ltd. seeks physicians in the following specialties: obstetrics/gynecology, orthopaedic surgery, and ophthalmology. Opportunity to enter established practice with progressive multi-specialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

Family practice — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Family practitioner needed to join solo practitioner and physicians' assistant in Gettysburg, SD. Practice has 6,000 active charts and patients are drawn from a wide area. The 29-bed, local hospital has consulting surgeon, radiologist and pathologist available with easy access to all other specialties. Close to recreation area with excellent water sports, fishing and hunting. For more information, contact David Yecha, M.D., 608 East Garfield, Gettysburg, SD 57442, (605) 765-2431.

Pediatrics and family practice positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Want to buy a practice: Family Practice, SOLO or share/group; midwest. Prefer Twin Cities or radius 100 miles, but will consider all other places. WILLING TO WAIT FOR UP TO ONE YEAR. Thinking of retirement or relocation? I am an MD/diplomate ABFP. Write Minnesota Medicine (744), 2221 University Avenue SE #400, Minneapolis, Minnesota 55414.

Family physician, internist, southwestern minnesota Rural Primary Care Group — 12 physicians (8 Family Physicians, Internist, 2 General Surgeons, Pediatrician) in an Agricultural-Commercial-University town of 11,000 invites residency trained/board certified Family Physician and Internist to join progressive patient-oriented practice in a recently built hospital and ambulatory care center. USUAL CHAMBER OF COMMERCE CLAIMS NEARLY TRUE HERE! C. P. Martin, M.D., Doctors' Plaza, Marshall, MN 56258; Phone: (507) 532-9631.

Bookeeper - Medical - 20 years experience. A.A. degree from Univ. of MN. Degree from Rasmussen Business College, St. Paul. Accounts receivables and payables, payroll, tax forms, financial reports, billing. Prefers East Metro Area. Call 489-2308.

(Continued on page 160)

Classified Advertisements

(Continued from page 159)

OB-GYN AND FAMILY PHYSICIAN — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

OCCUPATIONAL MEDICINE — Position available with Mankato Clinic, Ltd. Full range of pre-employment, occupational medicine and emergency duties, along with general practice as desired. All-American community; full range of benefits and liberal time off; salary first year, incentive pay after. For more information, call collect: R.F. Roskens, Adm. or B.C. McGregor, M.D., 507-625-1811.

WANTED: Family practitioner to join a 5 physician partnership in Litchfield, MN (a pleasant town of 6000 located 70 miles west of Minneapolis). If interested, please write or call collect at (612) 693-2804, Daniel A. Johnson, M.D., 35 E. 4th St., Litchfield, MN 55355.

PHYSICIAN OPPORTUNITIES available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

FAMILY PRACTICE ORIENTED multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

INTERNIST WANTED. Must be Board Certified or Board Eligible. Prefer subspecialty such as Gastroenterology, Pulmonary, etc. Four Internists on staff at present. 89 bed acute care hospital in Northern New York State. Excellent area for year round activities, hunting, fishing, skiing, etc. Send resume to Norman M. Gervais, Executive Vice President, The Alice Hyde Hospital Association, Malone, New York 12953.

PSYCHIATRIST to join progressive multi-specialty group of 50 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: Harris P. Hinderaker, M.D., 101 Willmar Avenue, Willmar, MN 56201.

PSYCHIATRIST — Consider an employment situation that offers: a competitive salary, a 40 hour week, malpractice coverage, 30 days paid vacation and other excellent fringe benefits, in a JCAH accredited progressive medical center. The city of St. Cloud, Minnesota, and the surrounding area boasts of the high quality of family living that is afforded its residents who enjoy clean air, easy access to a wide variety of four-season outdoor recreational opportunities, excellent educational facilities which include a State University, St. John's University and the College of St. Benedict and a full range of services available in a metropolitan setting while maintaining the quality of suburban and rural living. St. Cloud is only 75 minutes from Minneapolis/St. Paul Metropolitan area. License in any state accepted. Financial assistance to defer cost of relocation. Equal Opportunity Employer. Write: Chief, Psychiatry Service, Veterans Administration Medical Center, St. Cloud, Minnesota 56301, or call (612) 252-1670, ext. 368.

FAMILY PRACTICE PHYSICIAN(S) wanted, board certified or eligible, to join four physicians in a growing family practice group. Position(s) are available on a full-time or part-time basis. Practice is located in area that offers advantages of a smaller community, while only minutes away from the Twin Cities. If interested, call Dr. Joseph Kandiko or Mr. Michael Stein, at (612) 448-2050.

NEEDED: FAMILY PHYSICIAN and/or OB.GYN. for permanent location with Paynesville Medical Clinic, P.A.. Three established family physicians now in clinic. New hospital with full privileges. Salary negotiable. 90 minutes from Minneapolis on N.W. Hiway 55 on Lake Koronis. Immediate position available. Please call collect or write: R.J. Lindeman, M.D., Paynesville Medical Clinic, P.A., Paynesville, MN 56362, (612) 243-3779 Office, (612) 243-3633 Home.

Classified Advertisements

RECRUITMENT FOR FACULTY POSITIONS —Clinical faculty, rank negotiable, University of Minnesota School of Dentistry. Applications are invited for part-time consultative diagnostic and treatment planning services in specialty clinics. M.D. degree required. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Please send a brief resume and area(s) of clinical specialties (or request an application form). Bonita Bartholomew, University of Minnesota School of Dentistry, 15-116a Moos Tower, 515 Delaware St. SE, Mpls., MN 55455.

FAMILY PRACTICE position available July 1, 1985 to replace retiring member of six man family practice association in St. Cloud. Contact by mail, Family Practice Associates, 103 Doctors Park, St. Cloud, MN 56301.

FARMINGTON, MN, four-man Family Practice group seeks to replace leaving partner. Board eligible — board certified desired. River's Edge Medical Clinic offers proximity to metropolitan area, 55 bed JCAH with 65 bed nursing home, resident ER hospital coverage nights and weekend, modern clinic with established practice. Contact Murray H. Hunter, M.D., River's Edge Medical Clinic, 310 Division Street, Farmington, MN 55024. (612) 463-7181.

FAMILY PHYSICIAN BC/BC F.P. residency grad. to join growing 2 man group in Northfield. OB and surgical skills desirable. Open hospital staff. Guaranteed salary plus productivity incentive. Full partnership one year. Please contact: Dr. Halvorson, 500 S. Water St., Northfield, MN 55057. 1-507-645-4444.

OFFICE SPACE FOR RENT: Physician in Valley Medical Arts Building, 287 Marschall Road, Shakopee, MN., wishes to sublet his office space to another physician. Unfinished space also available. Call (612) 758-6238 or (507) 375-3391.

SECOND FAMILY PRACTITIONER needed to staff a satellite of a 38-physician, multispecialty group in Kiel, a beautiful small community in east central Wisconsin. Attractive income arrangements, association membership possible after one year, pension and profit sharing, extensive fringe benefits. Contact R. B. Windsor, M.D., 1011 North 8 Street, Sheboygan, WI 53081; (414) 457-4461.

FAMILY PRACTITIONER WANTED. Must be Board Certified or Board Eligible. Solo practice but opportunity for cross coverage with others in same specialty. Excellent area for year round activities, hunting, fishing, skiing, etc. Lakes and mountains within twelve miles. 89 bed acute care hospital serving a population of over 30,000. Send resume to Norman M. Gervais, Executive Vice President, The Alice Hyde Hospital Association, Malone, New York, 12953

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Opportunities available: Board Certified or Board Eligible Ophthalmologist, Board Certified or Board Eligible Internist with subspecialty training, Board Certified or Board Eligible Family Practitioners to expand our Family Practice Department and offer opportunity of Branch Office practice. Contact C.C Lowery, Clinic Administrator at (218) 751-1280, home (218) 751-9718 or Jerry Thompson, M.D. (218) 751-1280, home (218) 751-9437.

PROFESSIONAL OFFICE Space Available: Save — overhead expenses. Pleasant, modern professional building. Long established practice. Free parking available. Receptionist provided. Low rent. Near North Memorial Medical Center. Contact Donald Metz, M.D. at Robbinsdale Clinic, P.A., 3819 West Broadway, Robbinsdale, MN 55422 (612) 533-2534.

PHYSICIAN NEEDED. Fremont Community Clinic, No. Mpls. PT into FT.$20-$22 per hour, plus benefits. Call Jean, Joan, or Keta at 588-9416.

PEDIATRICIAN WANTED. Immediate opening for Board Eligible or Board Certified physician. 80 bed acute care hospital serving a population of over 30,000. Located in Northern New York. Excellent living area. Four seasons for all activities. Send resume to Norman M. Gervais, Executive Vice President, The Alice Hyde Hospital Association, Malone, New York 12953.

PRACTICE OPPORTUNITY. Assume Minneapolis-suburban very active practice. Family practice or internal medicine emphasis. Low investment. Write: Minnesota Medicine (748) 2221 University Ave. SE. #400, Minneapolis, 55414.

(Continued on page 162)

Classified Advertisements

(Continued from page 161)

ST. PETER REGIONAL TREATMENT Center, St, Peter, MN, has salaried positions for psychiatrists in several areas of clinical practice. We are a 600 bed psychiatric facility serving a multitude of disability groups including mentally ill, chemically dependent, mentally retarded, and mentally ill and dangerous. JCAH Accredited. These are new positions that are becoming available because we are expanding our medical staff. Join a group of academically oriented board certified psychiatrists with the University of Minnesota affiliations. Release time for teaching and research activities is available. St. Peter is a college town of 9,000 in the Minnesota River Valley with abundant outdoor recreation and good schools. We are located 64 miles south of the Twin Cities and 12 miles north of a university town of 40,000+. Salary up to $75,000 per year with board certification and relevant clinical/academic/administrative experience. Contact Brian Gottlieb, M.D., Chief of Staff, at Minnesota Security Hospital, Sheppard Drive, St. Peter, MN 56082 or call collect at 507-931-7127.

TWELVE-PHYSICIAN multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

DIRECTOR OF LABORATORIES — Excellent management opportunity for physician with a medical specialty (or board eligible) in area such as pathology, internal medicine, pediatrics or occupational health, and at least two years of administrative or supervisory experience in a public health or large institutional clinical laboratory. Graduate training in laboratory science with biology or biochemistry specialization desirable. Will direct all activities of the Minnesota Public Health Laboratories to assure quality services and programs in areas of chemical and microbiological testing. Salary range: $52,000-$83,000. If interested, send resume to Russ Havir, Minnesota Department of Health, 717 Delaware St. S.E., Mpls., Minnesota 55440 or call (612) 623-5065.

FAMILY PRACTICE: BC/BE to work in multi-specialty clinic located in beautiful river town. Outstanding prerequisites and salary. Starting date open. Call or write: M.T. Sprangers, M.D., Interstate Medical Center, Highway 61 West, Red Wing, MN 55066. 612/388-3503.

ORLANDO, FLORIDA — Expanding group practice needs two family practitioners and one internist between now and August, 1985. Guaranteed salary $60,000. Immediate full participation in profits, extensive fringe benefits. Service area near new hospital near Disney World. Send CV to: Sand Lake Medical Group, 5815 Makoma Drive, Orlando, Florida 32809.

OB-GYN WANTED by 14-member clinic. We are located in a community of 18,000 with a drawing area of approximately 45,000, 50 miles south of Minneapolis-St. Paul. Guaranteed salary the first year plus full fringe benefit package. Contact: Ray W. Wood, M.D. or Darral Mischke, Admstr., Faribault Clinic, 924 NE First Street, Faribault, MN 55021, Telephone: (507) 334-3921.

FOR SALE — Fully equipped professional building in South St. Paul designed for two doctors. Well established general practice. Doctor anticipates retiring in near future. Potential buyers please phone (612) 451-1489 for an appointment.

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THE COMPLETE HYPNOTIC PROVIDES ALL THESE BENEFITS:

- Rapid sleep onset[1-6]
- More total sleep time[1-6]
- Undiminished efficacy for at least 28 consecutive nights[2-4]
- Patients usually awake rested and refreshed[7-9]
- Avoids causing early awakenings or rebound insomnia after discontinuation of therapy[2,5,10-12]

Caution patients about driving, operating hazardous machinery or drinking alcohol during therapy. Limit dose to 15 mg in elderly or debilitated patients. Contraindicated during pregnancy.

DALMANE® Ⓒ
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References: **1.** Kales J *et al*: *Clin Pharmacol Ther* *12*:691-697, Jul-Aug 1971. **2.** Kales A *et al*: *Clin Pharmacol Ther* *18*:356-363, Sep 1975. **3.** Kales A *et al*: *Clin Pharmacol Ther* *19*:576-583, May 1976. **4.** Kales A *et al*: *Clin Pharmacol Ther* *32*:781-788, Dec 1982. **5.** Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc* *27*:541-546, Dec 1979. **6.** Kales A, Kales JD: *J Clin Pharmacol* *3*:140-150, Apr 1983. **7.** Greenblatt DJ, Allen MD, Shader RI: *Clin Pharmacol Ther* *21*:355-361, Mar 1977. **8.** Zimmerman AM: *Curr Ther Res* *13*:18-22, Jan 1971. **9.** Amrein R *et al*: *Drugs Exp Clin Res* *9*(1):85-99, 1983. **10.** Monti JM: *Methods Find Exp Clin Pharmacol* *3*:303-326, May 1981. **11.** Greenblatt DJ *et al*: *Sleep* *5*(Suppl 1):S18-S27, 1982. **12.** Kales A *et al*: *Pharmacology* *26*:121-137, 1983.

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flurazepam HCl/Roche

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; in acute or chronic medical situations requiring restful sleep. Objective sleep laboratory data have shown effectiveness for at least 28 consecutive nights of administration. Since insomnia is often transient and intermittent, prolonged administration is generally not necessary or recommended. Repeated therapy should only be undertaken with appropriate patient evaluation.

Contraindications: Known hypersensitivity to flurazepam HCl; pregnancy. Benzodiazepines may cause fetal damage when administered during pregnancy. Several studies suggest an increased risk of congenital malformations associated with benzodiazepine use during the first trimester. Warn patients of the potential risks to the fetus should the possibility of becoming pregnant exist while receiving flurazepam. Instruct patient to discontinue drug prior to becoming pregnant. Consider the possibility of pregnancy prior to instituting therapy.

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Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Employ usual precautions in severely depressed patients, or in those with latent depression or suicidal tendencies, or in those with impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatase; and paradoxical reactions, *e.g.*, excitement, stimulation and hyperactivity.

Dosage: Individualize for maximum beneficial effect. *Adults:* 30 mg usual dosage; 15 mg may suffice in some patients. *Elderly or debilitated patients:* 15 mg recommended initially until response is determined.

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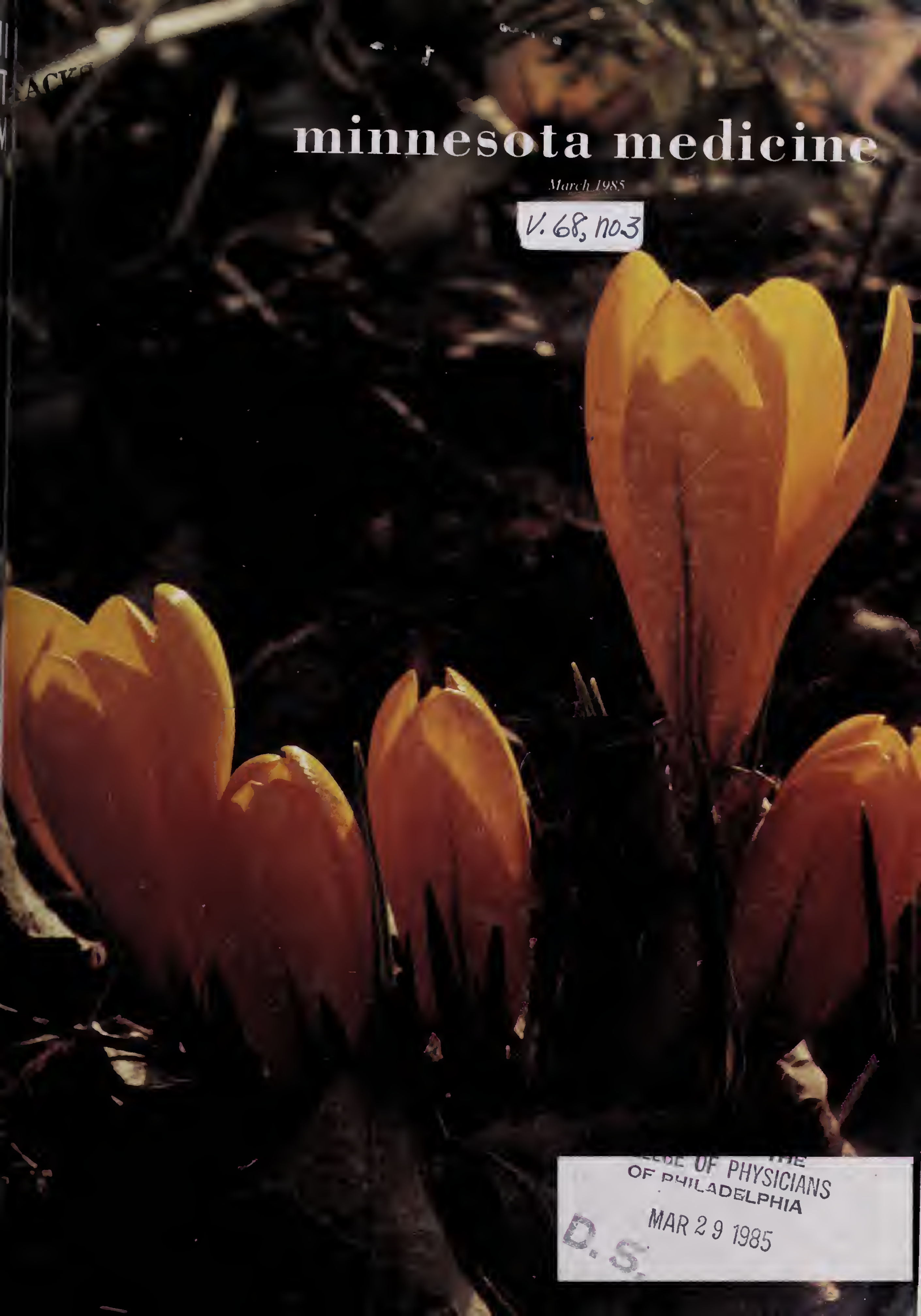
March 1985

V. 68, no3



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Minnesota Medical Association

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President's Letter

Health Care Cost Dilemma — My Perspective

Facts

*Health care costs in the United States reached 11 percent of the gross national product in 1984 or $393 billion.

*Every person in America spent approximately $2,000 for health care; each family $4,000.

*Nation's health care dollar in 1982:

Where it came from:	Where it went:
16 cents Medicare	42 cents to hospital care
11 cents Medicaid	9 cents to nursing home care
7 cents all other federal programs	19 cents to physician service
9 cents all other state and local government programs	19 cents to other personal health care
29 cents private health insurance and other private third parties	11 cents other health spending
28 cents direct patient payments	

*The CPIs for all services index registered an increase of 139.4 percent over ten years between mid-1974 and mid-1984. During that period the total medical care index rose 153.2 percent. Physicians' fees rose 151.1 percent and hospital services rose 233.7 percent.

*A recent MMA poll shows the public feels physicians are not interested in cost control.

A. Causes: (We can't do much about, but need to know they exist.)

1. Inflation

   Inflation accounts for 57 percent of cost/price increases in the last decade.

2. Health Care Manpower

   Medical care requires a labor intensive industry. Three eight-hour shifts of nurses and other necessary personnel are needed to run a hospital rather than one eight-hour shift as in most industries. (Not to be confused with medical manpower excess — see below.)

3. The Graying of our Population

   At this time 11 percent of our population is 65 years or older. Yet they consume 33 percent of health care dollars. By the year 2020 they will account for 22 percent of the population. We should look upon this as one of the blessings of improved medical care, yet a great percentage of the health care dollar will be spent in this age group. 50% of the average person's total health care costs occur in the last 2 years of that person's life, and 60% of that 50% in the last six weeks of life. Living wills will help medical personnel and families determine how extensive terminal care should be.

4. Hill Burton Appropriations/Medicare

The Hill Burton program stimulated the building of excessive hospital beds at a time when cost considerations were not great. With the advent of Medicare to fill these beds, this further fueled the furnace of inflation. These two programs are the great underlying causes of our present dilemma.

Underbeded areas (Portland, Maine) and underdoctored areas (Green Bay, Wisc.) counter current trends toward prepaid systems and increasing competition.

5. Faulty Reimbursement Incentive

Cost consciousness was not a consideration taught to my generation in medical school. "The best possible care at any price" however noble is now being replaced by the competitive mode of "providing good care at the best price."

B. Causes We Can Change: (Causes that could be altered to either improve or worsen our cost care dilemma.)

1. First Dollar Coverage

Negotiation of union contracts and other insurance coverage has evolved to the state where first dollar coverage has been given to many of our patients. There has been little cost sensitivity to shop for economical care. Reverting to deductibles, co-insurance and catastrophic umbrellas would go a long way in relieving this situation. This is how we buy our car insurance.

2. Professional Liability

Physicians, hospitals, and drug companies having to pay huge premiums for product liability and malpractice insurance must, of course, in turn pass these costs onto the consumer. The AMA is currently working on methods of relief in this area. Physicians paying 40 to $101,000 (N.Y. neurosurgeons) a year in malpractice premiums most would agree is absurd. This trend must be reduced while maintaining patient protection. Some drug companies are removing useful drugs from the market because of product liability. Bendictin, needed biologics such as DPT have been removed or curtailed already. This situation is apt to worsen before it gets public attention.

3. Defensive Medicine

It is estimated that 25 to 50 percent of medical care is defensive in origin to prevent malpractice or professional liability. This ties in with professional liability above. AMA attorney, B.J. Anderson, said this leads physicians to turning away high risk patients, refusing high risk procedures, or early retirement.

4. Government Mandated Programs

A New York study indicated that hospitals spend 25 percent of their budget to meet local, state, and federal regulations. An example is the hospital I use was required to cover louvered doors in the older part of the hospital because of OSCHA standards at the cost of $40,000.

5. New Technology

Technology that didn't exist until just a few years ago is commonplace now. With pacemakers, coronary bypass operations, micro surgery, lens implantation, renal dialysis, CAT Scanners, will help us practice better quality medicine, but we have to decide whether the cost is acceptable. Patient polls indicate they don't want to do away with new technology but are reluctant to pay for it.

6. Overutilization

   Newton Minnow, former chairman of the FTC, stated that the high cost of medical care results not from paying more for the same service but consuming more. In 1967, 650 people in the United States were on kidney dialysis. By 1980 the number had increased to 64,000. In 1981, the United States paid out $1.2 billion for dialysis. By 1990 the total cost is expected to reach $6 billion.

7. Lifestyle

   According to the Minnesota Department of Health, in 1984, smoking alone cost our economy $374 million. Nationally, alcohol abuse causes 10 percent of all health care expenditures. Federal estimates of illness and accidents caused by self-destructive lifestyles in the United States accounted for more than half of the $393 billion spent on health care in 1984.

8. Quackery and Other Questionable Remedies.

   Each year billions of dollars are spent on questionable cures, potions, vitamins, laxatives, etc. Over a billion dollars a year are spent on laxatives, and I can't imagine there's $1 billion worth of constipation in the United States!

C. **Hard to Measure Causes:** (That I suspect are significant.)

1. Medical Manpower Excesses

   The costs of producing excess numbers of doctors, just in taxpayer contributions to physician education, are great. (See previous letter on manpower, Minnesota Medicine, February 1985.) Overspecialization is a related factor.

2. Medical Equipment and Supplies

   Nobody has put any heat on medical suppliers like they have on hospitals and physicians, but I suspect there is significant profit in supplies to hospitals and doctors' offices (i.e. medical equipment, respirators, instruments, IV fluids, CT Scanners, etc.).

3. Medical Advertising and Marketing

   In the Twin City area particularly, marketing and advertising costs have to be significant. This is money that does not go for patient care. Increased competition has also spurred the building of new clinics that I suspect will not always fulfill their promises nor their waiting rooms.

What Have We Done as Physicians?

1. We urged a voluntary fee freeze on a nationwide basis, with 80% compliance by physicians.

2. We, particularly in the metropolitan area, have been very aggressive not admitting patients unnecessarily and in getting patients that are admitted out of the hospital sooner.

3. I think there's been an increasing sensitivity regarding ordering of tests. There are some groups that are reusing "nonreusable equipment or throwaways".

4. There's been a switch to more outpatient and office care.

5. The metropolitan area has been especially active in experimenting with new delivery systems such as HMOs, PPOs and IPAs.

6. The Minnesota Medical Association has been a leader in urging health care lifestyle changes such as our post smoke-free society by the year 2000, the use of motorcycle helmets and seat belts, and the responsible use of alcohol.

Current and Future Concerns

1. Medical education and research. With cost-cutting, medical research and education are apt to be trimmed rather significantly. Care needs to be taken that basic research, new innovative procedures, drugs and technology are not curtailed significantly.

2. We must insure that the "uninsurable" receive care. In our selection process, looking for the patient that won't get sick, we don't exclude the patient that's apt to get sick.

3. Quality of care. In our rush to get patients out of the hospital, we must make sure that our quality is maintained. We must remain the patient's advocate. I have concern that medicine will become so unattractive to bright students that we will be unable to attract them to our profession. I hope we can return to the time when we can recommend our profession to our children. Powerful groups of consumers — corporations, unions, government — will shop for cost effective health care. This is competition. Quality is apt to be a secondary concern.

4. Cost shifting. It's not fair whether it be the federal government or an indemnity company or an HMO. Utilization review yes, discounts no.

5. We must face the reality of the rationing of health care. It's here.

My Wish Tree

1. I would wish that the regulators wanting to alter medical care will ask those of us that provide it, what our concerns are. It seems that many recommendations are done by those not involved in the trenches. It seems appropriate that at least our opinions be asked if not heeded.

2. I would wish that government bodies, the Foundation for Health Care, and others would give programs a chance to work. There are so many forms, laws, regulations that we must adhere to. Particularly demeaning is the attestation statement that we are not liers or cheaters on our medical charts. Our aim, as the patient's advocate, is to provide quality care, making it available at a reasonable cost. We need to protect the world's best medical care system.

3. That malpractice attorneys take a couple years vacation, more if they like.

4. I wish all physicians would become active in MMA's Public Education Program (PEP). The program is designed to tell the public — our patients — that we share their concerns. Recently, all MMA members were given the opportunity to order two brochures developed under PEP. We Care For You is specially designed to reasssure our Medicare patients. Take Five explains our concerns regarding health care costs and what both physicians and patients can do about these costs. Won't you help? Let our patients (public) see that we are interested in doing our part to reduce medical care costs while still maintaining quality. Talk to your patients about these issues. Order these brochures for your waiting room. Talk to your local service organizations, communicate with your legislators. We must try to protect the best medical care system utilizing increasingly scarce resources.

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association

1985 MMA Annual Meeting to be Held at the St. Paul Radisson

The Board approved a site change for the MMA Annual Meeting to be held May 8-10, 1985. MMA will meet at the St. Paul Radisson instead of the Radisson South in Bloomington.

Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: The Shape of Your Future Competition

An Address before the Medical Directors of the Kaiser Permanente Medical Care Program of Southern California

Ninth of a Series

"Until recently, the prepaid medical plans known as H.M.O.s were dismissed as relatively expensive aberrations that flourished mainly in California and among government employees."

Milt Freudenheim, "Surge of Prepaid Health Plans,"
THE NEW YORK TIMES, December 15, 1984

"Nineteen eighty-four was a tough year for California health care providers. Doctors, a glut on the market, faced the specter of reduced incomes and paper pushers supervising their medical practices. Hospitals statewide struggled to stay open as utilization review sent patients home an average of a day earlier or kept them out of the hospital altogether with outpatient surgical facilities . . . Economic dislocations in the California health care system will continue to grow as dollars remain low in the public sector and contracting and utilization review become established in the private sector. Watch for large corporations, Wall Street darlings, to buy up strings of hospitals, HMOs and medical supply companies. If these corporations can buy up the services of doctors, too, they eventually could control the whole health care market."

Jane Birnhaum, *Los Angeles Herald Examiner*
writer, in "State of the State." *California,*
January, pages 73-77, 1985.

Laguna-Niguel, California* — When your Doctor Harry Shragg invited me to address you, there was much I didn't know about your group: (1) that you are a medical partnership — the only one in the Kaiser system; (2) that you have over 2000 full-time physicians serving nearly 1.8 million patients; (3) that you attract and retain well qualified physicians, with over 20 applicants for each position and with a turnover rate of only 1.3 percent; (4) that you feel you control your practice of medicine, although you work closely and cooperatively with the people of Kaiser Health Plans, who do your marketing, and with the administrators of Kaiser Foundation hospitals, who manage your hospitals; 5) that you share a set of values, e.g., a prepaid plan is the best way to bring economical care to the greatest number of people, that dates back more than forty years. Doctor Raymond Kay has described these shared values and your physician culture in his 1974 book, "Historical Review of the Southern California Permanente Medical Group."

That you would invite me at all astonishes me. After all, I come from the fee-for-service sector, which has ostracized you in the past. Besides, for a Minnesotan to lecture Californians about the future strikes me as ludicrous. A Minnesotan tried that in the last election with a landslide lack of success. Harrison Salisbury-NEW YORK TIMES writer, Minneapolis native, and card-carrying member of the Eastern Intellectual Establishment — also failed to evaluate Californians properly. After a stint in Los Angeles, he commented: "I have seen the future, and it doesn't work."

The State That Works

But you and I know California does work. Furthermore, as John Naisbitt of MEGATRENDS fame, says, you are the "key indicator" state, a bellwether of things to come.

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*Adapted from a presentation before Medical Directors, Permanente Medical Care Program, Southern California Region.

Your candidates for President get elected; you set the economic and fashion trends; you attract enterprising immigrants like a magnet; and you ignite the flames of the health care revolution. You didn't invent HMOs, but you were the first to operate them on a large scale. With 32 HMOs, five million members, and over 20 percent HMO market penetration, California leads all other States. Even the man who coined the term ''Health Maintenance Organization,'' Paul Ellwood, calls California home.

If these facts were not enough, Kaiser Health Plans are far and away the largest U.S. HMO, with 4.41 million members compared to Cigna, your nearest competitor, with 663,000 enrollees. If you look at HMOs as single plans, three of the Kaiser HMOs — Kaiser Northern California, Kaiser Southern California, and Kaiser Oregon — rank among the top ten largest HMOs. If you throw in Cigna California and MaxiCare California, your state has five of the ten biggest national HMOs.

Largest Corporate HMOs with Multiple HMO Outlets

Ranked by Enrollment on December 31, 1984

Kaiser Health Plans	4,416,480
Cigna Health Plan, Inc.	663,096
Prucare	338,096
Health America Corp.	332,898
Mexicare Health Plans, Inc.	296,807
U.S. Health Care Systems, Inc.	239,805
Charter Med Inc.	235,063
Family Health Program	146,677
SHARE Development Corp.	82,146
Hancock/Dikewood, Inc.	72,846

Source: InterStudy

Largest Single HMOs

June 1984 Enrollment

Kaiser, Northern California	1,926,000
Kaiser, Southern California	1,773,000
HIP, New York	880,000
Cigna, California	350,000
Group Health Corporation, Puget Sound	330,000
Health Net	285,000
Kaiser, Oregon	270,000
HMO-Pennsylvania	255,000
Group Health, Twin Cities	210,000
Maxi-Care California	185,000

Source: InterStudy

Blue Cross-Blue Shield has 1.2 million members in 54 HMOs. These are not listed above because the various plans are operated as separate entities.

Your Race to Expand Nationally

You are the biggest, and you are expanding East, South, and North. Here's what THE NEW YORK TIMES had to say about you in their December 15, 1984 edition:

''In the race to establish national networks, Kaiser Health Plan, Inc., the largest H.M.O., is spending $300 million on expansion this year, according to Robert J. Ericksen, senior vice president. He said Kaiser plans to spend $2 billion in the next five years. From its California base, Kaiser has jumped to nine other states and the District of Columbia. It added 200,000 members this year, for a total of 4.6 million. Revenues have passed 3 billion. In 1985, Kaiser will add three more states, including New York, where it plans to expand the Westchester Community Health Plan, a small H.M.O. in White Plains.''

And you are able to finance your growth through tax-exempt financing through state agencies.

Ladies and gentlemen, you would seem to be on a roll. Or, as you say in California, you may simply be going with the flow. To many onlookers, your flow is so mammoth it constitutes the Wave of the Future.

This Talk

Why, then, do you want me to talk to you? What are you worried about? You are the Megatrend of the Health Care System, are you not?

Well, you may be. But California may be too gargantuan, too turbulent, and too fast moving for ordinary mortals, even Californians, to comprehend. You represent Life in the Fast Lane. You have been variously described as the sixth largest industrial power on Earth and as two nations — Northern and Southern California — rolled into one.

The Earthquake State of Medicine

In any event, you are massive. With 25 million citizens, you are the most populous state. When you quake, the rest of us shake. Besides, you have 60,000 registered physicians, most of them agitated about seismic upheavals in Medicine. You rank about 9.9 on the Richter Scale of Health Care Changes, which is high, considering the highest natural earthquake has registered 8.6. The trouble is none of you can agree if the Fault Line starts in Sacramento or Washington.

The Minnesota Model

Minnesota is an easier place to grasp. For the analyst or forecaster, Minnesota is smaller, tidier, cleaner, calmer, and more manageable. Minnesota makes a good model. Besides, Minnesotans love to organize: farm cooperatives, political parties, group practices, Mayo Clinics, and competitive health plans of all stripes. If you want to study organizational models, we're it. In the case of health care, it just may be that although California starts the fads, Minnesota sets the trends. You'll be pleased to hear Minnesota has been declared the Silicon Valley of Health Care.

A Start

I shall start by comparing the Los Angeles competitive health care situation to the Twin Cities. To begin with, Los Angeles County has 7.8 million people in central Los Angeles and 83 contiguous cities, while the Twin Cities Metropolitan Area has 2.1 million souls. You are a group of suburbs in search of a metropolis, and we are a metropolis in search of suburbs.

You have ethnic diversity — with Chinese, Japanese, Filipinos, Thais, Vietnamese, Iranians, Egyptian Copts, Blacks, and Hispanics. Over 2 million of you are Hispanic. We have mainly ethnic homogeneity — mostly people of Northern European stock with a smattering of other white ethnic groups and Blacks and North American Indians.

As a state, Minnesota has nine HMOs with close to 20 percent market penetration. Of some 800,000 Minnesotans in HMOs, only about 100,000 live outside the Twin Cities. The Twin Cities have five HMOs with nearly 40 percent market share. These include Group Health with 215,000 members, Physicians Health Plan with 203,000 members, MedCenter with 189,000 members, SHARE with 116,000 members, HMO-Minnesota with 72,000 members, and Coordinated Health with 18,000 members. Physicians Health Plan recently announced it has surpassed Group Health in number of members, but I am unable to verify that fact.

Your Future Competition

In your charge to me, you asked me to describe the shape of your future competition. You are assuming, I gather, that the current strategies and nature of our HMOs represent the future. One thing is clear to me. As competition heats up, the more the HMOs begin the resemble each other as they exchange marketing thrusts. As you know, the purists classify HMO models as IPAs, Staff, Group, and Networks. In the Twin Cities, PHP is an IPA, Group Health is a staff model, but the other three are becoming hybrids — networks. To grow fast in the face of competition, even pure staff HMOs are learning the quickest route to growth is through acquiring or affiliating with solo practitioners and fee-for-service groups.

In your future, you will witness an increasing consolidation and concentration of groups with networking to assure dispersed geographic access to doctors' offices and to hospitals. In general, the network and IPA models are growing faster than the staff or group models.

Although you may be going head-to-head nationally with HMO chains, keep in mind your stiffest competition locally and regionally may come from network models. Your biggest competition, then, may come from a "bottom-up" networking of existing practitioners rather than from "top-down" competition from heavily capitalized national HMOs.

How will your group compete in this environment? I suspect you have a grand marketing strategy, and I suspect you will rely on your time-honored conservative approaches of solid marketing, competitive price, well-qualified and selected medical staff, and control of hospital utilization. You will also retain your three-pronged approach of a closely cooperating Health Plan, Medical Group, and Hospital and Group Managers. No doubt your competitors will be probing for chinks in your armor. Other than your proven structure and your grand plan, what may sustain you is your attention to detail — hiring ethnically sensitive physicians, paying heed to local cultures and practice styles elsewhere, keeping your service levels high and waiting lines low, and monitoring the satisfaction of your patients and your staff.

The Easy Part is Over

Many say the profitable part of the Twin Cities HMO market has already been saturated. Because of declining margins and the need for rapid growth, Twin Cities' HMOs are acquiring small clinics outright; affiliating with others; demanding exclusivity with still others; contracting out their services to independent specialists; setting up satellites in suburbs; spilling out into other cities; seeking capital for more growth; marketing to individuals, smaller businesses, and insurance brokers; and going after the Medicare and Medicaid populations. The Twin Cities HMO market, in short, has matured.

Mother Corporations, HMOs and PPOs

As a result of all these activities, two of the mother corporations for our HMOs — United Healthcare and the SHARE Development Corporation — now rank among the fastest growing national HMOs. United Healthcare, which manages Physicians Health Plan, is operating 11 plans in ten states at the end of 1984. In the fourth quarter of 1984, it signed contracts to develop HMOs in Evanville, Indiana, Greensboro, North Carolina, Columbia, South Carolina, and Corpus Christi, Texas. United Healthcare recently went public. Another mother corporation, MedCenters of America, will soon go public and plans to compete regionally or perhaps nationally by networking with other multispecialty clinics. Group Health Plan, in conjunction with four other similar plans elsewhere, may also form a holding company to raise capital for expansion. You have 12 HMOs listed for Los Angeles and Long Beach in the latest HMO directory, and I understand the HMO market penetration is nearing 30 percent.

We have six PPOs, all having difficult times gaining market share. Their names are 1st Health, Preferred One, Minnesota Health Network, Select Care, Family Health Plan, Health Activation Systems, and Coordinated Health Care. Many physicians belong to multiple PPOs and do not distinguish one from another. PPOs appear to be competing against each other rather than the HMOs; the potential customers are confused as to what differentiates one from another; and the markets they hope to attract are waiting to see what happens rather than buying. None are big enough to exert any significant leverage. Rumors are afoot that some or all of these PPOs may consolidate. I do not know how many PPOs you have or what their market share is, but they are numerous and, I am told, are making market inroads.

The Fear of Capitalized Medicine

I know little about the intensity of your competition here. I'm sure it is frenzied. As I crisscross this country, it has dawned upon me that physicians everywhere are talking about forming their own HMOs. This isn't surprising, since nationally HMOs grew 15.3 percent last year, an exponential growth rate which, if sustained, would double HMOs members in the next six years. Corporate Medicine has arrived with a Big Bang. Hospital administrators, physicians, and providers of every ilk in big cities, in medium-sized cities, small towns, and in rural America are planning how to organize Competitive Health Plans to ward competitors and to gain control of their destinies. The fear of capitalized medicine has replaced the fear of socialized medicine. Many conservative physicians regard capitalized medicine as synonymous with socialized medicine. To threatened independent physicians, an HMO official pushing for competitive reform nationally differs little from a government bureaucrat advocating national health insurance. They are both "socialists."

Henry J. Kaiser and Sidney Garfield

Your early supporter, Henry J. Kaiser, would have resented being lumped with government bureaucrats.In preparing for this talk, I read a 1943 book by Paul de Gruiff "Kaiser Wakes the Doctors." The book had its roots in a May 1943 READER'S DIGEST article: "Tomorrow's Health Plan — Today!". The book told of Doctor Sidney Garfield's and Henry Kaiser's struggles to put together your first plans and to line them with your medical groups. Their plan, according to READER'S DIGEST, was ". . . to keep medicine out of the hands of Government bureaucrats."

Garfield's Vision

In a chapter entitled "Mayo Clinic for the Common Man," de Gruiff quotes Doctor Garfield:

Hospitals — A Complete Service Under One Roof

"Hospitals have developed into the workshop for the physician. This work is specialized because the field of knowledge of medicine has become so extensive no man can master it all. Yet, with all this division of work, instead of a hospital becoming one organized integrality, each division became a separate entity. This is in direct contrast to the organization that has occurred in the world of business. Here the development of new methods and division of labor should result in an organization which houses a complete service under one roof."

Individual Practice — A Waste of Facilities and Equipment

"On the contrary, in medicine as it is individually practiced there is enormous waste in facilities and equipment. Each doctor equips his own office more or less completely, whereas a group of doctors can pool its equipment and facilities to prevent duplication and economize in cost."

Physician Handling of Problems Outside His Knowledge

"Working as an individual, the doctor often tries to pass on problems outside his

knowledge. Not only in medical problems but in fee collecting, accounting, purchasing. In a group the opposite is true. Many an individual doctor still tries to do his own laboratory work . . . He is wasting a good deal of his time doing something in which he is not well trained. In a group the doctors can afford to hire the best laboratory personnel.''

The Organization as a Marketing Mechanism

''Practicing individually, each doctor has to sell himself . . . It results in a super-bedside manner which has no real relation to real medical ability. In a group the organization is the selling point. For instance the Mayo Clinic sells each doctor in the organization by its reputation.''

Convenience of Consultation

''Individual practice doesn't permit ready consultation. The waste of patient's time in going from one medical building to another to each specialty is enormous. Consultation in a group under one roof is rapid, economical, and relatively simple.''

Garfield's Corporate Forecast

When Garfield spoke those words four score and two years ago, he accurately forecasted the realities behind the current corporate transformation of medicine.

He was a physician who thought like a businessman. His expression of ''an organization which houses a complete service under one room'' is a forerunner for our terminology of ''vertical integration.'' He was arguing clinical services offered by a group under one roof work more efficiently and economically, result in more convenient consultation, make more effective use of other professional and managerial disciplines, make better use of the physician's time and other skills, can be marketed more easily, and provide better ancillary services.

Today we call this approach ''the integrated and coordinated use of health resources.'' Whatever you call it — the corporate transformation of medicine, the industrialization of health care, or the commercialization of care — the era of truly organized medicine, i.e., medicine practiced within an organizational context, is upon us. What may have surprised Doctor Garfield, who died a month ago, and here I'm speculating, are the centrifugal forces that are making hospitals go where the people are, rather than waiting for the people to come to them. Convenient access through multiple geographic points has become important in today's frenetic marketplace.

My Understanding

As I understand it, from me you want to get a sense of what is going on in the Twin Cities to see what it forebodes for you here. In other words, does the Twin Cities competitive health scene have any future lessons for you in Southern California. You want to understand how the Minnesota health care system is restructuring, to see how the pieces fit together, and to envision what the new system might look like.

My common sense tells me the Twin Cities and Los Angeles are in roughly the same state of market development, and are evolving into a full-blown competitive market about the same speed. Once HMO market penetration reaches between 10 and 15 percent, as it has here and in Minnesota, a chain reaction of interrelated market forces come into play. These forces become powerful, and in the eyes of the Reagan Administration, will provide the tools and framework for controlling health care expenditures while maintaining quality and improving access.

IPAs

What are the dynamics of the competitive health care marketplace?

Well, for one thing, once a strong multispecialty clinic puts an HMO into the field, Independent Practice Associations (IPAs) quickly ensue. That's what happened in the

Twin Cities in 1972 when the St. Louis Park Clinic developed their own HMO. Within two years, Physicians Health Plan was on the scene.

That must have taken place here, too. For I note from my HMO Directory that 16 of California's 32 HMOs are IPAs.

When IPAs first sprang into existence, physicians usually formed them defensively. I believe this defensive motive is changing. Future physician-controlled IPAs will form, particularly in medium-sized cities and in rural regions as offensive strategies to preempt other HMOs from entering the territory and to protect and to complement physicians fee-for-service practice. Cash flow and capital formation, organized groups of physicians are learning, are better with an HMO and a fee-for-service practice.

After forming an IPA, physicians soon learn the price sensitivity of the market. They learn that they are at economic risk, and they can become draconian in eliminating-losing services, in disciplining physician abusers, and even in removing physician abusers from the plan.

Physicians and their managers also become adroit at the marketing game. The Physicians Health Plan, an IPA, is one of the fastest growing HMOs in the Twin Cities and recently pulled even with Group Health Plan as the single largest HMO in the Twin Cities. According to the January 11 edition of the AMA NEWS, four years ago Group Health was twice as big as PHP with 185,000 members compared to PHP's 85,000 members. Much of the credit for PHP's fast growth goes to their marketing department which has effectively pushed the ideas of flexibility, specialist availability, and geographic access under the theme of "Freedom of Choice". I spoke to one physician who has played a role in PHP marketing. He told me: "We regard Freedom of Choice as one of the five basic Freedoms, but we know Freedom of Choice of Physician has to be coupled with competitive prices and rigid controls."

Staff HMOs

As you would anticipate, the closed-panel, or staff HMO, pursues a different strategy. Group Health, now about to become our second largest HMO and one that has existed for almost 30 years, pushes its "Group" concept, its reputation, and its longevity rather than growth. It is now concentrating more on customer service and quality of care. It introduces its ads with a catchy jingle that says: "Join the Group, Group Health, Inc." Group Health is also widening its geographic access, building satellite clinics, and admitting its patients to more hospitals. Giant billboards are sprouting around the Twin Cities, announcing new locations and new points of entry into the system. Rather than "Freedom of Choice of Physician," Group Health seem to be stressing "Freedom of Access." Meanwhile Group Health is also adding more salaried specialists and contracting with more independent specialty groups.

The Blues

Blue Cross and Blue Shield plans become more aggressive and innovative and price competitive. This is certainly the case in Minnesota. They are asking for exclusivity for their own HMO, which is losing market share. Direct Blue Cross HMO competition with other HMOs hasn't worked well in the Twin Cities. So the Blues are trying a different tack.

And starting in January 1985, the Blues offered their Aware Gold program which permits first dollar coverage of office visits in doctor's offices at rates competitive with HMOs.

Like HMOs, Aware Gold will pay for office calls, physical examinations, well baby care, and outpatient diagnostic work such as X-rays and laboratory tests. But unlike HMOs, the program will pay the physician for each service. The marketing pitch is that the new program "combines the best of HMO-type benefits with the best of traditional health coverage."

The ideas behind the program are to win back younger people with children and to contain the spread of HMOs to rural areas, where the Blues remain strong. Blue Cross is also pushing $500 deductible policies to keep their rates low and to give their healthier members options.

Their Aware Gold program is faring well, partly due to aggressive and persuasive advertising on WCCO, a local radio station with the highest market share in the United State. Of 5700 Minnesota physicians eligible for the program, 4800 have already joined the plan.

Increasing Market Share

Competing HMOs have become creative in finding ways to increase their market share. Many are building satellite clinics, both in growing suburbs and in thriving downtown locations. Others acquire existing groups outright. Still others are adding affiliated clinics.

Starting in 1979, the SHARE health plan gambled and went for the Medicare Market. This risk proved to be a bonanza, both in SHARE profitability and growth. Now all major Twin Cities' HMOs have vigorous marketing campaigns catering to the Seniors, and collectively, HMOs now have 30 percent of the Seniors' Market. Recently SHARE hit the Metropolitan papers with full-page ads offering a year's free care to those Senior Citizens who would like to try their plan. SHARE may also be going after the woman's market. Recent SHARE ads have featured women physicians.

The Seniors' Market

If there is one way for an HMO to grow fast, it would seem to be by tapping the Medicare Market. In the HFCA-Medicare demonstrations around the country these last four years, more than 200,000 beneficiaries have been added. This rapid growth occurred in Miami, where in 1984 an entrepreneur, Miguel Recarey Jr., took in $170 million from the Medicare demonstration project, built the largest HMO in Florida, served 130,000 patients in 140 offices, and cleared $8 million profit in the first six months of 1984. Using Medicare demonstration funds, he parlayed a loan of $4000 into the largest HMO in Florida, another of Naisbitt's bellwether states that sets the trends in this country.

SHARE, a well-managed Twin Cities' HMO, has done an imaginative job in capturing the Medicare market. Using an aggressive marketing campaign — aimed at the loneliness of old people, their desire for sociability, and their craving for affordable and comprehensive care — SHARE grew from 722 Medicare enrollees in 1979 to over 30,000 now, expanded its other population segments, and added over 25 other ''affiliated'' physicians' clinics. SHARE's marketing has featured daily announcements by a respected older radio personality, Senior Proms with Senior Queens and Kings, Senior Picnics, Senior Bingo Parties, and Senior signup gatherings. This may sound hokey, but Senior Citizens who are young at heart, love it. As I write, Twin Cities HMOs have enrolled over 40,000 Twin Cities Medicare recipients, close to 30 percent of the older market.

Hospitals

And then there are the hospitals. Although some believe the future of America's voluntary hospitals is gloomy, I am not among them. An extraordinary ferment exists in the managerial and organizational patterns of American hospitals. They are undergoing horizontal and vertical integration, and many are joining larger systems. These systems offer administrative resources, economies of scale for purchasing, and more efficient use of capital. This systems trend is inevitable. Hospitals simply demand a certain critical mass of management skills and capital to function in today's competitive marketplace.

Not only does the hospital need managers to handle the central core of inpatients, but the hospital needs managers to run the outside segments of the business: *Aftercare* (home health care, skilled nursing, geriatric outpatient care and day care,) and *Alternative Delivery Systems* (HMOs, PPOs, Primary Care Networks), and *Ambulatory Care* (Imaging centers, outpatient dialysis, birthing centers, urgent care clinics, and surgicenters).

Hospital Response to Market Forces

In response to market forces, hospitals are entering a turbulent period of innovation and creativity. Many hospital administrators, previously shackled by government regulations, welcome the opportunity to compete. You will see more hospitals and physicians joining hands for shared enterprises. Some of these enterprises will evolve out of Paul Ellwood's MeSH model, the so-called "top-down" approach, in which the hospital administration signs a formal contract with its medical staff. Others will emerge out of the "bottom-up" style, in which administrators and individual physicians or groups agree to become partners for specific projects or programs.

Projects and Programs

These projects or programs will differ in design. Some will be based on demographic considerations (geriatric day care centers, pediatric day care centers, Children's Hospitals, Women's health centers); others will cater to life style (fitness or wellness clinics, holistic centers, sports medicine centers); others will focus on behavioral or stress disorders (pain, chemical dependency, eating problems, premenstrual stress, or job stress), and still others will focus on new technologies (lithotrypter machines, imaging devices, CAT scanners, Nuclear Magnetic Resonance equipment, and high technology of various specialties, such as laser for ophthalmology).

These activities may, of course, further fragment the hospital market, but consumers are demanding choices, and hospital administrators are giving choices to them.

In the future, hospitals may mimic large department stores, who offer multiple boutiques within one store. The hospital will offer multiple programs targeted to different market segments, all under one roof. The idea will be to have a one-stop health shopping with variety. To prevent too extensive a fragmentation, other hospitals will differentiate themselves into larger entities such as Heart Institutes, or Eye Institutes, or Cancer Treatment Centers, or in the case of Academic Medical Centers, as Transplant Centers, or as High Technology Medical Centers.

Corporations

Sleeping Giants that we overlook in competitive medicine are the corporations themselves. We may think of them as influencing payment of health care costs, but we don't regard them as competitors. Yet many are becoming just that. Corporations are rapidly emerging as integrated health care providers. They are hiring more industrial physicians, setting up health screening clinics, establishing wellness programs, buying out commercial laboratories, treating stress disorders, and swinging their weight on utilization review committees to minimize hospital admissions.

As they intrude into medical practice, corporations are also depending less on traditional indemnity insurance. Indeed, many have withdrawn their funds from local and national insurance pools and have gone into self-funding. This withdrawal has taken much of profit out of traditional insurance plans. By the late 1980s, the purchasing power of these independent self-funding plans will probably exceed those of the Blues and all other commerical insurers combined.

The Entrepreneurs

Now a word about the entrepreneurs. Their cumulative effects are tough to fathom because they are so diverse. Entrepreneurs permeate every nook and cranny of the health care system. They include such people as Bruce Flashner who saw the opportunity of the freestanding walk-in market. They include the innovators in Phoenix, who set up surgicenters there, and drove the percent of surgery performed as outpatients from 10 to 40 percent. They include the founders and movers of the Hospital Corporation of America, Humana, and American Medical Enterprises. They include those who are supplying emergency room and operating room personnel for hundreds of American hospitals. They include the managers of commercial laboratories who are managing hospital laboratories and encouraging hospital administrators to send a bulk of their work out at a fraction of its inpatient cost. They include consulting firm principals who are urging physicians to form "physician-controlled HMOs" to keep from being isolated from the market. They include anyone who is making innovative organizational changes to cope with the Health Care Revolution. In the era of competitive corporate medicine, entrepreneurs are a vital and driving forces in bringing about rapid change.

Forces at Work

When I started writing this series of editorials, I quoted this sentence from Paul Starr's book, "The Social Transformation of American Medicine": "The great irony is that the opposition of doctors and hospitals set in motion entrepreneurial forces that may end up depriving both private doctors and local hospitals of their traditional autonomy."

What are these forces? They are no secret. You'll find their names on lips of HMO executives, hospital administrators, Blue Cross and Blue Shield executives, and physician leaders of multispecialty groups. You'll hear them in the corporate boardrooms of medical firms, in the marketing departments of hospital systems and HMOs, and in the offices of health care consultants.

Their names are *Capital, Market Share, Growth* and *Culture of the Organization*. They are the essential ingredients driving corporate health care strategists. These are reasons Wall Street investors have poured more than $400 million dollars into for-profit HMO claims. These are the reasons for-profit Hospital Corporations are blooming.

Using government Medicare capital, SHARE in the Twin Cities and Florida's International Medical Centers have exploded into health-care empires. Using an organized medical society as a conduit for capital, Richard Burke, President of Physicians Health Plan in the Twin Cities, has been able to enrich himself, set the stage to raise more capital, increased his plan's market share, and produced the nucleus of a national IPA empire, There is nothing evil about this. It is the American Way, and the distinctions between profit and for-profit firms and the boundaries between medicine and business are rapidly blurring.

If increased market share and rapid growth are achieved, the source of the capital doesn't seem to make much difference to investors, to patients, to businessmen, or to the government. It makes a difference to many physicians and to the academic community, but not to those who can count.

Why is the Culture of the Organization important? Because, as Peters and Waterman pointed out *In Search of Excellence*, culture, or a sense of shared meanings of what the organization is all about, differentiates excellent organizations from also-rans. The Mayo Clinic has its unique culture. So does Permanente. Both of you are rich in stories, slogans, agendas and traditions. Both of you have a convergence of values and standards, and both of you will survive and thrive.

Lack of Capital

But lack of capital is threatening the very pillars of American Medicine — independent physicians, voluntary hospitals, and academic medical centers. If present trends continue, it is those sectors of our health care system that will be forced to establish integrated organizations or systems if they are to compete. The current trends — *practice within a competitive corporation environment, pressure by government and business to reduce costs*, and *the glut of physicians* — will leave them no choice. I have growing confidence that physicians and voluntary hospitals are already mobilizing and organizing to protect themselves and to establish countervailing marketing forces. But I am not so sanguine about academic medical centers. Medical academia may have too many individualists, too large a belief in their elitist status, hierarchical pecking order, and professional purity; and too great a distrust of the corporate world to reorganize in a competitive world.

Closing Comments

I conclude these remarks by saying I do not think national corporate medical firms will completely dominate the medical landscape. That is neither inevitable or desirable. We need a mix of competing health plans and private physicians. As Americans we believe in a pluralistic society with choices. Many of us, and I am one of them, prefer a private physician as a means of access to the system. But not everyone wants or can afford that choice. No doubt others will prefer to join local or regional competing health plans.

There is room for both competing health plans and independent physicians. How much room is the question. I doubt HMOs will exceed 60 percent market share, even in the Twin Cities, because countervailing competition forces will come into play. Health care markets, even HMO markets, mature, as they are doing in Minneapolis and St. Paul. HMOs have to seek out smaller employers, recruit individuals, cater to government programs like Medicare and Medicaid, and move to unspoiled markets in other states. The law of diminishing returns sets in as competitors learn to play the game, and the business cycle turns down.

In the end, because of their deep belief in the market system, the American people will demand choices. But these choices, as even the most stubborn and individualist among us are learning, will be within a competitve and corporate context with economic constraints. This combination of rationing and commercialism will not satisfy older American physicians who have practiced in the golden and open-ended era of American Medicine. But if it has sufficient quality at an appropriate price, the new combination may satisfy many of the American people. Current projections are that HMOs will care for perhaps 20 percent of U.S. citizens by 1990. The rest will be cared for in a competitive environment in a corporate context. Those organizations, such as the Southern California Permanente Medical group, which have resolved or clearly established the cultural boundaries between managers and physicians, will have the discipline and the resources to grow.

Richard L Reece MD

American Diabetes Association

Minnesota Affiliate, Inc.

New Support Program Available

A free emotional support service has recently been developed by the American Diabetes Association, Minnesota Affiliate, (ADAM) and is being offered in the Twin Cities area. The ADAM Visitation Program provides diabetics, their family members and friends the experience of visiting and talking with well-adjusted diabetics, parents or spouse or a diabetic and may be the turning point in a patient's life.

A volunteer, trained in effective listening and interpersonal skills, serves as a positive example of what the individual may look forward to, when integrating diabetes into his lifestyle. The purpose of the program is to give emotional support. No medical or educational information is provided.

Anyone who feels the need for emotional support related to diabetes is eligible for the program. Visits by trained volunteers can be made at the hospital, at home, or wherever agreed upon. All hospital visits require approval of the patient's physician.

If you would like to refer a person to the program, call Bonnie Webb at the American Diabetes Association (612) 920-6796.

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Vice Speaker, House of Delegates	John Sutherland, M.D., Minneapolis John Graham, M.D., Minneapolis

MMA Bylaws provide that "after the Nominating Committee has made its report to the House of Delegates, any delegate may nominate any eligible member for any office of the Association to be filled at such annual meeting."

Members of 1985 MMA Nominating Committee*

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James J. Hansen, M.D., St. Cloud

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*The Nominating Committee consists of one individual from each Trustee District, who at the time of his/her selection is a delegate or alternate delegate. The immediate Past President shall serve as an ex-officio member of the Nominating Committee with the privilege of voting.

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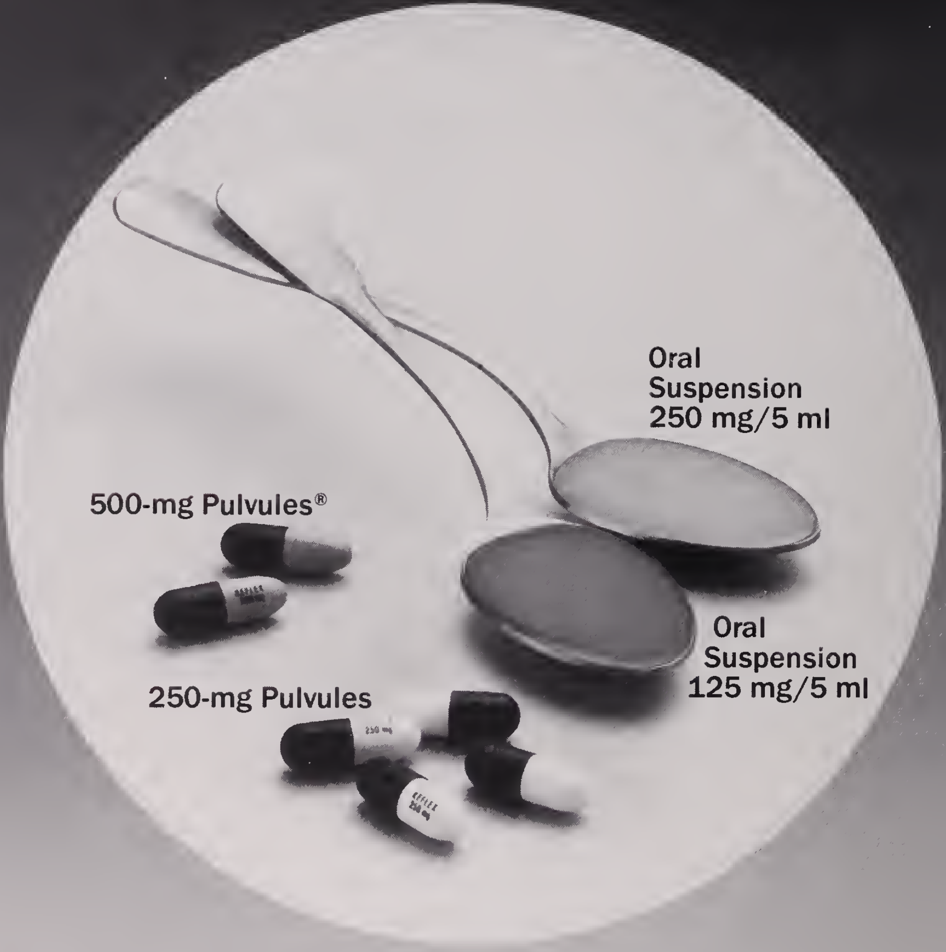

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The Telephone: Irritant or Healing Tool

CHARLES MEYER, M.D.*

"Watson, come here, I want you!"

How ironic that those first words spoken by telephone in 1876 were a ringing command. Physicians today can attest to the often dictatorial ways of A.G. Bell's invention. To physicians, the telephone is both indispensable and unmerciful. In many ways, it serves as a metaphor for the stresses that plague us and the foibles that thwart us. The telephone may also represent a clue to how we can enter its second century with renewed purpose.

The telephone won't wait. Its insistent ring, the pressing questions it transmits, and the never-ending pile of telephone messages parallel the urgency that is part of a doctor's day and the persistent demands of medical practice. Like the increasingly complex problems which require more physician time for less financial reward, phone calls to physicians bring a proliferation of involved problems which MDs handle without remuneration. The often trivial, yet time-consuming calls for purely procedural reasons (nursing homes) mirror the increasing welter of busywork that deluges the physician. In summary, the phone is viewed by many physicians as an unrewarding, irritating, nonproductive, but "necessary-evil" part of their day.

Yet, the telephone is a crucial mode of communicating with our patients. In this day of HMOs, DRGs, and HCFA, when many physicians feel that much of what has been right about the practice of medicine is being threatened, one feature of our art that needs celebrating is our communication with our patients.

Walter Benjamin in a recent editorial in the *New England Journal of Medicine* quoted a proverb: "The tongue that brings healing is a tree of life." In addition to our drugs and our scalpels, our tongues (working with our ears!) should heal and comfort. The telephone is an invention of unparalleled speed and efficiency to help us with that task. The telephone is a daily reminder that first and foremost, we are there to listen to our patients — their gripes, aches and all. And the better we do that, the richer we and society will be because of it.

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*Medical Staff, Secretary/Treasurer, Fairview-Southdale Hospital, Minneapolis.

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We are looking for spring, summer and fall scenes for covers for MINNESOTA MEDICINE. These must be *vertical slides.* Please send your 35 mm slides to me at MINNESOTA MEDICINE's office, 2221 University Avenue SE Suite 400, Minneapolis, Minnesota 55414.

Bruce Nydahl, M.D.
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Percutaneous Endoscopic Gastrostomy

JOHN G. SHEAREN, M.D.;* ROBERT L. GOODALE, M.D., Ph.D.;* and SUE HIMMELEIN, R.N.*

Percutaneous endoscopic gastrostomy (PEG) was performed in 15 patients. The tube was placed for long-term enteral nutrition in seven patients and for palliative decompression in eight patients with carcinomatoses and intestinal obstruction. Successful enteral feeding or decompression of the gastrointestinal tract was accomplished in each case. There were no major complications or mortality related to the procedure.

THE PLACEMENT OF a gastric tube for feeding was first proposed by Egeberg in 1837. Sedillot of Strasbourg in France attempted the first gastrostomies with three patients dying of peritonitis. The first *successful* gastrostomy was done by Verneuil in 1876 who secured the gastric wall to the parietal peritoneum in a patient with carcinoma of the esophagus. Modifications of the original procedure followed, including those of Fontan, Depage, Janeway, Von Hacker, Witzel, and Stamm.[1]

Routine postoperative decompression of the gastrointestinal tract via a gastrostomy tube (rather than by nasogastric tube) was popularized by Farris and Smith in the 1950s.[2] In addition to the avoidance of discomfort from nasogastric tubes, they cited lessened risk of complications from nasogastric tubes such as laryngitis, esophageal stricture, esophagitis, ulcers of the ala nasi, pharyngitis, tubotympanitis, and aspiration pueumonitis. An excellent review of the complications of nasogastrointestinal intubation has been presented by Hanselman and Meyer.[3]

Complications of gastrostomy tubes can be quite serious and include peritonitis, tube dislodgment, aspirations, bleeding, wound infection, leakage, skin excoriation, gastric prolapse, tube migration and obstruction of the esophagus or pylorus. The incidence of gastrostomy tube complications has ranged from 3% in a series of 492 Stamm gastrostomies reported by Parrish, et al[4] to 14.4% nonfatal and 5.6% fatal complications reported by Connar and Sealy.[5]

Percutaneous endoscopic gastrostomy (PEG) was first described by Ponsky and Gauderer in 1981 and offers an attractive and potentially cheaper alternative to the conventional surgical methods of gastric tube placement and a more tolerable substitute to the prolonged use of nasogastric tubes. Use of this technique with minor modifications for enteral feeding has been reported by others.[7,8,9] In the collected series there has been no mortality and minimal morbidity in 195 patients. This compares favorably to the morbidity and mortality of conventional gastrostomy. The technique allows adequate apposition of gastric and abdominal wall surfaces to prevent peritoneal leaks and stomal leakage is minimal as a result of the small-caliber entry site into the gastric wall.

In addition to its use for enteral feeding, we have used this technique in poor-risk patients with end-stage cancer and gastrointestinal obstruction. This is a report on our series of patients.

Patients and Methods

A total of 15 patients ranging from seven to 79 years underwent PEG tube placement. In seven patients long-term enteral support was the indication. The enteral nutrition service found these seven patients to be very poor surgical risks. Six out of seven were candidates for extended nursing home care. Four had inability to swallow secondary to severe stroke or degenerative brain-stem disease, one suffered from a slipped Nissen fundoplication, and a seven-year-old patient, a kidney transplant recipient, did not tolerate nasal feeding tubes. In the remaining

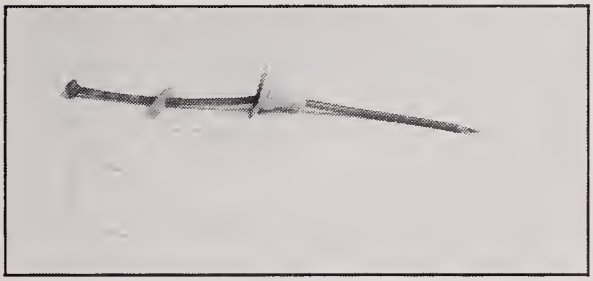

Figure — Modified 16 Fr mushroom catheter with additional side holes proximal to internal stent. The Medicut catheter dilator is shown in place.

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*Department of Surgery, University of Minnesota Medical School, Minneapolis, Minnesota.

This work was supported in part by a grant from Minnesota Medical Foundation.

eight patients persistent vomiting from obstruction was the cause of hospitalization. These patients had known gynecologic cancer with laparotomy in the past for similar obstruction. These patients were treated with PEG for palliative decompression (Table).

The technique of PEG is similar to that of Ponsky and Gauderer. The patient is prepared with usual medication and topical oral anesthesia for endoscopy in the endoscopy suite or at the bedside. The end-viewing fiberoptic endoscopy is passed into the stomach. Insufflation with air brings the gastric wall near the parietal peritoneum for tube placement. Then a tapered 16-gauge needle-catheter Medicut® (spinal needle if there is significant adipose tissue) is pushed into the stomach percutaneously and the catheter tip is observed within the lumen via the gastroscope. A #1 suture is threaded into the stomach through the catheter, grasped with a biopsy forceps and withdrawn with the endoscope through the mouth. A 16 French modified catheter (Figure) is then secured to the #1 silk thread using the 16-gauge tapered plastic catheter as a guide and the tube is pulled in a retrograde fashion through the esophagus, stomach and abdominal wall. The apposition of the tube bumper with the wall is then endoscopically verified, and it is secured at the skin level with an additional rubber stopper and rubber nipple after skin protection is insured by placement of a Stomahesive stoma apparatus at the skin exit site. Feeding is initiated after 24 hours. Tubes placed for decompression are used immediately with removal of other indwelling tubes.

Results

We have performed PEG in 15 patients including seven for delivery of enteral nutrition and eight for decompression of the gastrointestinal tract in patients with carcinomatosis. There were no catheter-related deaths. One major progressive stoma erosion occurred in a patient with ovarian carcinomatosis secondary to poor stoma care and possibly excessive compression of the abdominal wall early in our expe-

TABLE

PT	Age/Sex	Diagnosis	Complication	Status — Comment (A-Alive D-Deceased)
1.	44/M	CVA	None	D-Extension of CVA, tube intact at autopsy after 20 days.
2.	31/F	Multiple Sclerosis	None	A-Functional tube-l year, changed at 6 wk, 20 wk.
3.	61/M	CVA	None	A-Functional tube 8 mo.
4.	7/F	Renal Transplant	None	A-Functinal tube 5 mo. Used as conduit for 8 Fr. tube placed into jejunum.
5.	70/M	Barretts Ulcer Esoph.	None	D-Hemorrhagic death; functional tube simultaneous feeding-decompression 6 wks.
6.	71/M	CVA	None	A-Tube discontinued at 3 mo-stoma closed.
7.	74/F	Slipped Nissen Dysphagia	None	A-Functioning tube-3 mo.
8.	32/F	SBO-Carcinomatosis (cervix)	Minor wound infection	D-Autopsy revealed intact tube at 5 days; good symptom relief
9.	51/F	SBO-Carcinomatosis (ovary)	Progressive stomal erosion	D-Tube permitted discharge from hospital with home care for 90 days.
10.	52/F	SBO-Carcinomatosis (cervix)	Standard Mushroom Catheter failure-plugged	D-Symptomatic relief 50 days.
11.	62/F	SBO-Carcinomatosis (ovary)	None	D-Symptomatic relief 5 days, ascites present without leak.
12.	65/F	SBO-Carcinomatosis (ovary)	None	D-Symptomatic relief 27 days.
13.	70/F	SBO-Carcinomatosis (ovary)	None	D-Symptomatic relief 20 days, tube intact at autopsy.
14.	61/F	SBO-Carcinomatosis (ovary)	None	D-Symptomatic relief 45 days.
15.	59/F	SBO-Carcinomatosis (ovary)	None	D-Symptomatic relief 30 days, permitted home care for 25 days ascites present without leak.

rience. One minor wound infection responded to antibiotic therapy and required no further intervention. In the first obstructed patient, a standard 16 French mushroom catheter failed because one of the suction holes became plugged by a rugal fold. This led to use of a modified 16 French catheter (Figure) with adequate decompression in the subsequent cases. This has provided a better quality of life for these terminally ill patients for time intervals ranging from five days to 90 days. In two patients with mild malignant ascites, the procedure was performed and no ascitic fluid leak occurred. Two patients with minimal evidence of obstruction were relieved of symptoms of nausea and emesis while undergoing chemotherapy by using intermittent decompression via the PEG tube. Autopsy studies revealed intact tubes with good visceral parietal peritoneal adhesion in two patients 10 days and 90 days after placement. Three tubes were changed at two months, three months, and one year after placement without incident. Use of Stomahesive and careful instruction concerning tube care has prevented local skin problems. In one patient the PEG tube initially was placed for decompression in the face of a bleeding Barrett's esophageal ulcer and, with prolongation of the patient's course, an 8 French tube was threaded through the PEG tube and positioned in the jejunum allowing simultaneous decompression and feeding. The average time required for placement of the PEG tube was 20 minutes.

Discussion

There have been many modifications in the technique of gastrostomy since its introduction into clinical practice by Sedillot. These modifications were developed to decrease the numerous complications which have arisen due to tube failures, leakage, peritonitis and wound complications. The endoscopic placement of a gastrostomy tube can be rapidly performed in infants and adults with minimal anesthesia. Morbidity and mortality are low in the hands of a skilled endoscopist.[7,8,9]

PEG can be also used to obtain decompression of the obstructed gastrointestinal tract in very-poor-risk patients where general anesthesia and laparotomy are contraindicated. PEG decompression may permit home care for the terminally-ill patient.

The great majority of PEG tubes can be placed using topical anesthesia with intravenous sedation in the endoscopy suite or at the bedside. This reduces the risk, and cost, of the gastrostomy procedure. The cost of standard operative gastrostomy tube placement at our institution is approximately 1500 dollars compared to approximately 700 dollars for PEG tube placement. PEG may become the procedure of choice for placement of permanent feeding gastrostomy tubes in patients requiring prolonged enteral nutrition. Our series shows that PEG is beneficial in the setting of gastrointestinal tract obstruction.

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Tax Survival

Shearson Lehman/American Express is offering free of charge an answer to the confusion raised by the recent tax proposals. It consists of a free copy of "Tax Alerts" updating tax proposal changes as they occur. "Tax Alerts" also includes tax saving investment ideas — useful whether tax laws change or not. For more information call Ken Nordlie, Shearson Lehman/American Express at 612-349-4885 in Minneapolis.

MMIE Malpractice Claim Review

Neurology

MMIE Risk Management Committee
Frank E. Johnson, M.D.
Chairman

Allegations

Negligent prescription of a medication, including failure to advise the patient of potential side effects, failure to monitor the drug program, failure to limit the number of refills, and failure to provide specific follow-up instructions.

Facts of Case

The patient, a 46-year-old female, was referred to Dr. X on May 17, 1978, because of cervical radicular pain which did not respond to conservative therapy. The patient was hospitalized from May 30 through June 8, 1978. Her diagnostic evaluation was essentially normal with the exception of cervical spine Xrays which revealed thinning of the disc space in the C5-6 and C6-7 areas. A trial program of physical therapy and low doses of Decadron was initiated. Although she did not exhibit any significant response to the treatment program, the patient was encouraged to continue a home physical therapy plan. She was given a prescription for 0.75 milligrams of Dexamethasone to be taken four times daily. Refills were authorized on a PRN basis. The patient was instructed by Dr. X to follow up with her family physician to taper the medication. The only further contact Dr. X had with the patient was in July, 1978, when he arranged for her to get a TENS unit.

Subsequent medical records indicated the patient did not follow up with her family physician concerning her use of Decadron. Rather the patient continued to obtain refills of the prescription through October, 1979, whenever her symptoms worsened. In November, 1979, the patient was evaluated at the Mayo Clinic, and a diagnosis of Cushing's Syndrome was made. Her symptoms included: diabetes mellitus, excessive skin striae, and muscle weakness. Her disease process was felt to be related to her excessive use of Decadron. A lawsuit was filed against Dr. X on September 28, 1981.

Disposition

This case was recently tried before a jury which assessed 15% negligence against Dr. X, 70% negligence against the patient, and 15% negligence against the pharmacy that continued to refill the patient's medication. Under Minnesota's comparative negligence doctrine, the patient did not recover any award for damages since her negligence exceeded 50%.

Claim Comment

Although no compensation for damages was paid to the patient, numerous problems were encountered in defending this case, including:

1. Dr. X's use of a PRN prescription without initiating a mechanism whereby the patient's use of the drug could be monitored, then discontinued after an appropriate amount of time.
2. Dr. X's failure to document in the record the prescription for Decadron, his discussion with the patient regarding potential side effects and risks associated with Decadron, or any specific follow-up care for the patient.
3. Dr. X's failure to communicate with the patient's family physician concerning the steroid therapy.

Risk Management Comment

1. In this case the jury found that the patient's continued refills constituted on-going medical care by Dr. X, serving to extend the statute of limitations beyond two years from the date the patient was last seen by Dr. X. PRN medication refills should be used with caution and only when the physician has a mechanism for monitoring the patient's use of the drug and a means for discontinuing it after a designated time period. It is suggested that physicians indicate on the original prescription a date when refills should be discontinued.

2. Defense attorneys have identified inadequate medical record documentation as one of the most frequent problems they must overcome in defending malpractice cases. Defensible records include documentation of informed consent discussions, a record of all medications prescribed, the nature of treatment given to the patient, and the follow-up treatment recommended.

3. Lack of communication between physicians is another problem frequently identified in defending malpractice claims. The treating physician has an obligation to inform the referring physician about treatment rendered and plans for follow-up to assure continuity of care.

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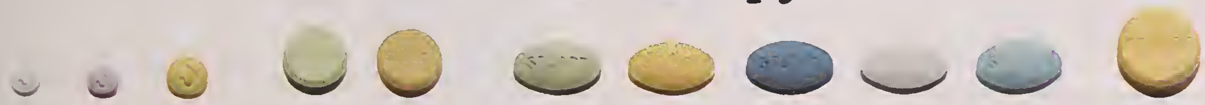

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The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg. below 90 mmHg). Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory. The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use.

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

Isosorbide dinitrate acts directly on vascular smooth muscle; therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug. A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet.

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent. Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose. Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon. Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg; for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose. In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined. *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg), Chewable Tablets (5, 10 mg); Oral Tablets (5, 10, 20, 30, 40 mg); Sustained Action Tablets (40 mg).

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Saphenous Vein Harvesting Using a Subcutanous Vein Remover

J. STONEWALL DORSEY, M.D.*

To facilitate harvesting of saphenous veins for aortocoronary bypass, a technique using a subcutaneous vein remover has been developed. This technique, which is applicable only to the segment of saphenous vein about the knee, is described. This technique was used in harvesting 48 veins from 30 patients who underwent aortocoronary artery bypass grafting. Intraoperative and postoperative complications (injured veins and bleeding) occurred in the first 11 patients. There were no complications in the last 19 patients. The greater saphenous vein can be harvested using a subcutaneous vein remover, but intraoperative and postoperative precautions are necessary to prevent injury to the vein and/or bleeding.

SINCE THE INTRODUCTION of aortocoronary artery bypass grafting,[1] the saphenous vein has been the most utilized and most effective substance to serve as a bypass conduit. Although the technique of harvesting the vein has become standardized, it remains time consuming and is often delegated to lesser trained members of the surgical team. The incidence of infection in the harvesting site is reportedly low,[2] but when it occurs, it can produce significant morbidity and prolonged hospitalization. Even in the absence of infection, incisional discomfort and leg edema can be frequent sources of patients' postoperative concerns and complaints.

A subcutaneous vein remover (Vein-Trap†) has been developed to facilitate harvesting of the greater saphenous vein. The author reports his experience with this device in 30 patients.

Technique

The subcutaneous vein remover is a disposable unit consisting of a vein guide catheter 115 cm in length and a cylindrical plastic tube 55 cm in length and 15 mm in diameter (Figure). One end of the cylinder contains two scalpel blades (5 mm × 4 mm) mounted around the circumference of the cylinder. The cutting edges of the blade are oriented for cutting with a rotary motion (Figure).

The technique to be described is applicable only to the segment of vein above the knee. The legs are prepped in the usual fashion for saphenous vein harvesting. The legs are slightly "frog-legged" such that the legs are slightly elevated; the medial aspect of the leg is directed anteriorly. Two 3-4 cm long oblique leg incisions are made; one about 5 cm below the inguinal ligament and the other over the medial aspect of the knee. The greater saphenous vein is isolated at both incisions and ligated. Through a transverse venotomy at the distal incision, the vein guide catheter is inserted and passed retrogradely; the vein guide exits

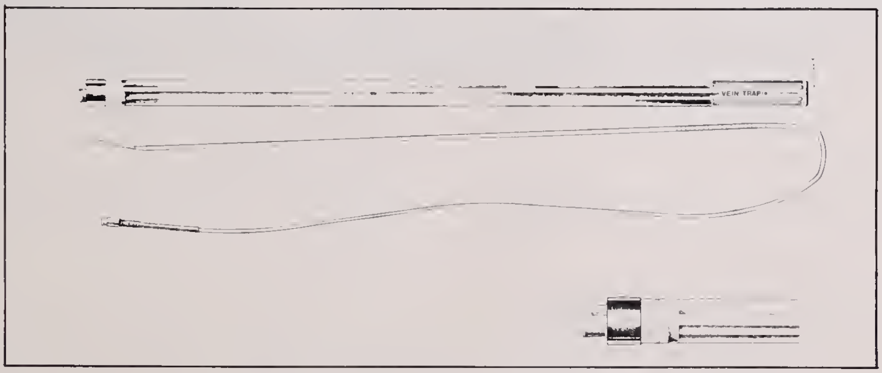

Figure — Subcutaneous Vein Remover

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†Atrium Medical Corporation, Amherst, New Hampshire

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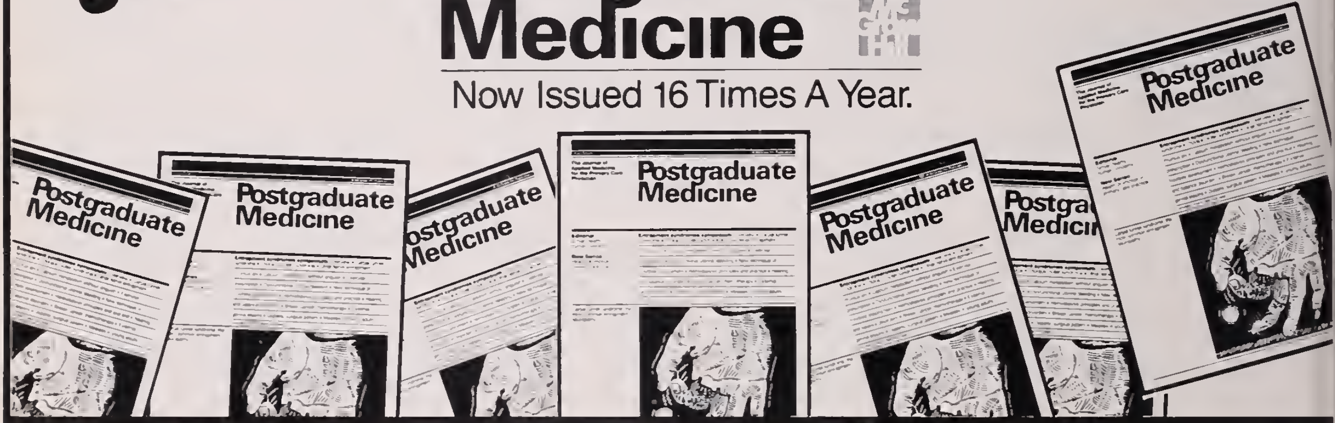

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through a venotomy at the proximal incision. After the catheter is secured to the vein, the vein remover is passed over the vein guide catheter at the knee. With a rotary motion, the vein remover is advanced subcutaneously up to the proximal incision. The dissected vein is then removed along with the catheter and the vein remover. The vein is removed from the catheter, and the tributaries ligated. Harvesting time is 3-5 minutes per vein. The wounds and the subcutaneous tunnel are packed with antibiotic-soaked gauze until cardiopulmonary bypass is completed and the heparin in reversed with protamine. The wounds are closed in layers with absorbable sutures. The subcutaneous tunnel is not drained. The entire length of the leg is wrapped snugly with Ace bandages and not unwrapped for 72 hours.

Results

This technique has been used in 30 patients. Problems with the device occurred in the first three patients with injury to the vein being the primary problem (Table). Intraoperative bleeding was a major problem in the initial 11 patients. Severe intraoperative bleeding occurred in four patients. These patients included two elderly patients (80 and 83 years old) and two patients on intraaortic balloon pump (IABP) assist. Seven other patients had moderate intraoperative bleeding. Intraoperative bleeding has not been a problem in the last 19 patients since packing the subcutaneous tunnel with gauze.

Table
Results with Vein Remover

Observation	Number of Patients
Intraoperative Bleeding	11
Vein Injury	3
Post-Operative Wound Hematoma	4
Pedal Edema (Unilateral)	1
Wound Infection	1
No Other Problems	2
No Problems	19

Postoperative complications were also related to bleeding. Four patients developed significant wound hematomas. Two of these patients developed extensive subcutaneous tracting of blood extending into the perineal area and up along the buttocks and lower back. Both had been on subcutaneous heparin postoperatively and had prolonged partial thromboplastin times. One of the patients who had been on IABP pre- and postoperatively required evacuation of his wound hematoma and became the only wound infection of the series.

One patient has had unilateral pedal edema postoperatively and no patient has complained of significant discomfort along the harvesting site. All of the last 19 patients have developed skin discoloration and slight swelling over the site secondary to blood in the subcutaneous tunnel. These changes usually resolved within three to four weeks.

Discussion

As with any new technique, problems were encountered with its initial implementation. The three initial veins were irreparably damaged probably because of three factors: excessive force during advancement of the vein remover; improper angling of the vein remover during advancement; and fixation of the vein guide catheter. The technique was altered to allow about ten quick rotations of the vein remover per each 1-2 cm advancement of the device. The vein remover is advanced parallel to the plane of the thigh along a presumed natural course of the vein. The course is defined by the vein guide catheter, which is not held but allowed to lay loosely on the operative field. These modifications have eliminated significant damage to the harvested vein. Occasionally, large branches are divided at their origin from the greater saphenous, and suture closure rather than ligatures or metal clips are required.

Postoperative wound hematomas were frequent at first, and one became infected. Significant wound hematomas occurred in patients who were obese, in cardiogenic shock, over 80 years old, or on IABP assist pre- or post-operatively. The device is no longer used in patients with these characteristics. Other precautions are still required to prevent postoperative hematomas. The leg is wrapped snugly with Ace bandages in the operating room, and this wrapping is not removed for 72 hours. Patient selection and postoperative compression dressings have prevented significant wound hematomas in the last 19 patients. This method has been very effective, even when the patients have been on subcutaneous heparin postoperatively.

The speed of harvesting the vein is not the major advantage of using the vein remover. Postoperatively the incidence of leg edema is very low; one patient had mild ankle edema on the side from which the vein was taken. This resolved within three to four weeks. None of the patients have experienced numbness at the incision sites. A sensation of mild tightness along the tunnel site resolves within three to four weeks. There have been no complaints regarding the skin discoloration, which also clears within four weeks.

Summary

The greater saphenous vein can be harvested with a subcutaneous vein remover. Possible intraoperative complications include damage to the vein and bleeding. With certain precautions, these problems can be prevented. Postoperative bleeding can be prevented by wrapping the extremity with a compression dressing and leaving this in place for about 72 hours. Postoperative sequelae are minimal. Patients seem to favor the final cosmetic appearance and lack of extremity discomfort.

References

1. Favaloro, RG: Saphenous vein graft in the surgical treatment of coronary artery disease. J Thorac Cardiovasc Surg 58.178, 1969.
2. Delaria, GA, et al.: Leg wound complications associated with coronary revascularization. J Thorac Cardiovasc Surg 81:403, 1981.

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INDICATIONS AND USAGE: These preparations are indicated for the treatment of infections caused by susceptible strains of designated microorganisms as follows: Respiratory Tract Infections (e.g., tonsillitis, pharyngitis, and lobar pneumonia) due to *S. pneumoniae* (formerly *D. pneumoniae*) and group A beta-hemolytic streptococci [penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever; Velosef (Cephradine, Squibb) is generally effective in the eradication of streptococci from the nasopharynx; substantial data establishing the efficacy of Velosef in the subsequent prevention of rheumatic fever are not available at present]; Otitis Media due to group A beta-hemolytic streptococci, *H. influenzae*, staphylococci, and *S. pneumoniae*; Skin and Skin Structures Infections due to staphylococci and beta-hemolytic streptococci; Urinary Tract Infections, including prostatitis, due to *E. coli, P. mirabilis, Klebsiella* species, and enterococci (*S. faecalis*).

Note: Culture and susceptibility tests should be initiated prior to and during therapy.

CONTRAINDICATIONS: In patients with known hypersensitivity to the cephalosporin group of antibiotics.

WARNINGS: *Use cephalosporin derivatives with great caution in penicillin-sensitive patients since there is clinical and laboratory evidence of partial cross-allergenicity of the two groups of antibiotics; there are instances of reactions to both drug classes (including anaphylaxis after parenteral use).* In persons who have demonstrated some form of allergy, particularly to drugs, use antibiotics, including cephradine, cautiously and only when absolutely necessary.

Pseudomembranous colitis has been reported with the use of cephalosporins (and other broad spectrum antibiotics); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with antibiotic use. Treatment with broad spectrum antibiotics alters normal flora of the colon and may permit overgrowth of clostridia. Studies indicate a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind the toxin *in vitro*. Mild cases of colitis may respond to drug discontinuance alone. Manage moderate to severe cases with fluid, electrolyte and protein supplementation as indicated. Oral vancomycin is the treatment of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile* when the colitis is severe or is not relieved by drug discontinuance; consider other causes of colitis.

PRECAUTIONS: General: Follow patients carefully to detect any side effects or unusual manifestations of drug idiosyncrasy. If a hypersensitivity reaction occurs, discontinue the drug and treat the patient with the usual agents, e.g., pressor amines, antihistamines, or corticosteroids. Administer cephradine with caution in the presence of markedly impaired renal function. In patients with known or suspected renal impairment, make careful clinical observation and appropriate laboratory studies prior to and during therapy as cephradine accumulates in the serum and tissues. See package insert for information on treatment of patients with impaired renal function. Prescribe cephradine with caution in individuals with a history of gastrointestinal disease, particularly colitis. Prolonged use of antibiotics may promote the overgrowth of nonsusceptible organisms. Take appropriate measures should superinfection occur during therapy. Indicated surgical procedures should be performed in conjunction with antibiotic therapy.

Information for Patients: Caution diabetic patients that false results may occur with urine glucose tests (see PRECAUTIONS, Drug/Laboratory Test Interactions). Advise the patient to comply with the full course of therapy even if he begins to feel better and to take a missed dose as soon as possible. Tell the patient he may take this medication with food or milk since G.I. upset may be a factor in compliance with the dosage regimen. The patient should report current use of any medicines and should be cautioned not to take other medications unless the physician knows and approves of their use (see PRECAUTIONS, Drug Interactions).

Laboratory Tests: In patients with known or suspected renal impairment, it is advisable to monitor renal function.

Drug Interactions: When administered concurrently, the following drugs may interact with cephalosporins:

Other antibacterial agents — Bacteriostats may interfere with the bactericidal action of cephalosporins in acute infection; other agents, e.g., aminoglycosides, colistin, polymyxins, vancomycin, may increase the possibility of nephrotoxicity.

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Drug/Laboratory Test Interactions: After treatment with cephradine, a false-positive reaction for glucose in the urine may occur with Benedict's solution, Fehling's solution, or with Clinitest® tablets, but not with enzyme-based tests such as Clinistix® and Tes-Tape®. False-positive Coombs test results may occur in newborns whose mothers received a cephalosporin prior to delivery. Cephalosporins have been reported to cause false-positive reactions in tests for urinary proteins which use sulfosalicylic acid, false elevations of urinary 17-ketosteroid values, and prolonged prothrombin times.

Carcinogenesis, Mutagenesis: Long-term studies in animals have not been performed to evaluate carcinogenic potential or mutagenesis.

Pregnancy Category B: Reproduction studies have been performed in mice and rats at doses up to 4 times the maximum indicated human dose and have revealed no evidence of impaired fertility or harm to the fetus due to cephradine. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, use this drug during pregnancy only if clearly needed.

Nursing Mothers: Since cephradine is excreted in breast milk during lactation, exercise caution when administering cephradine to a nursing woman.

Pediatric Use: Adequate information is unavailable on the efficacy of b.i.d. regimens in children under nine months of age.

ADVERSE REACTIONS: Untoward reactions are limited essentially to G.I. disturbances and, on occasion, to hypersensitivity phenomena. The latter are more likely to occur in persons who have previously demonstrated hypersensitivity and those with a history of allergy, asthma, hay fever, or urticaria.

The following adverse reactions have been reported following use of cephradine: G.I. — Symptoms of pseudomembranous colitis can appear during antibiotic therapy; nausea and vomiting have been reported rarely. Skin and Hypersensitivity Reactions — mild urticaria or skin rash, pruritus, joint pains. Hematologic — mild transient eosinophilia, leukopenia and neutropenia. Liver — transient mild rise of SGOT, SGPT, and total bilirubin with no evidence of hepatocellular damage. Renal — transitory rises in BUN have been observed in some patients treated with cephalosporins; their frequency increases in patients over 50 years old. In adults for whom serum creatinine determinations were performed, the rise in BUN was not accompanied by a rise in serum creatinine. Others — dizziness, tightness in the chest, and candidal vaginitis.

DOSAGE: Adults — For respiratory tract infections (other than lobar pneumonia) and skin and skin structure infections: 250 mg q. 6 h or 500 mg q. 12 h. For lobar pneumonia: 500 mg q. 6 h or 1 g q. 12 h. For uncomplicated urinary tract infections: 500 mg q. 12 h; for more serious UTI, including prostatitis, 500 mg q. 6 h or 1 g q. 12 h. Severe or chronic infections may require larger doses (up to 1 g q. 6 h). For dosage recommendations in patients with impaired renal function, consult package insert.

Children over 9 months of age — 25 to 50 mg/kg/day in equally divided doses q. 6 or 12 h. For otitis media due to *H. influenzae*: 75 to 100 mg/kg/day in equally divided doses q. 6 or 12 h but not to exceed 4 g/day. Dosage for children should not exceed dosage recommended for adults. There are no adequate data available on efficacy of b.i.d. regimens in children under 9 months of age.

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Imaging Updates

Mammography 1985

ROBERT J. RUST, M.D.*

Breast cancer is a highly prevalent, however, potentially curable form of cancer if detected in its early stages. Screening has been proven to help in detection of early cancers, and therefore, it has been demonstrated to decrease mortality.

BREAST CANCER IS the number one killer of American women, accounting for 19% of cancer deaths. In the United States, one of every eleven women will get breast cancer at some time during her life.

Risk Factors

— Female.

— Age. Peak incidence is 50 to 55 years, but one-third occur in women 35 to 50 years old.

— Family History. This implies a two to three fold increased risk of developing breast carcinoma. This risk is also increased if a relative has had premenopausal breast cancer and is increased to 8.8 times if the relative has had bilateral cancers.

— Cancer of one breast is associated with five times increased risk of occurrence in the opposite breast.

— Nulliparous.

— History of previous endometrial, ovarian, or colon carcinomas.

— White women have a higher risk in comparison to black women, although the gap has narrowed in recent years. Below age 40, blacks actually have a higher incidence.

— Upper social class women have a higher rate than lower social class.

— Jewish women and nuns have a higher rate than lower social classes.

— Seventh Day Adventists have lower than average rates.

— First full term pregnancy under the age of 18 years denotes approximately one-third the risk for breast cancer compared with women who have their first full term pregnancy when they are over the age of 35.

— Very high parity and lactation may protect against breast cancer.

— Relatively early age at menarche in women with relatively late age at menopause have increased risk for breast cancer. Artificially induced menopause protects against breast cancer. This protection appears to be lifelong and to result from removal of the ovaries, and there is evidence that the earlier the oophorectomy is performed, the lower the risk, as noted by Trichopoulos, et al., who discovered that women who have oophorectomies before the age of 35 have about one-third the risk for breast cancer compared with the risk for women who have natural menopause around age 50.

— History of fibrocystic disease carries a two to four fold increased risk of developing breast cancer.

— Heavy body build is associated with a moderately increased risk of breast cancer in postmenopausal women.

— High fat diet may increase the risk of breast cancer.

— Previous exposure to high levels of radiation in the chest carries a higher risk of subsequent development of breast cancer.

Indications

Indications for mammography include every symptomatic breast patient over 30 years of age, every female with a dominant palpable mass, and every female scheduled for breast biopsy. The mammogram is very helpful in characterization of the clinically palpable mass, however, a prime role of mammography in these patients is to exclude the presence of other lesions which may be clinically silent.

Recent guidelines, as issued by the American College of Radiology (ACR) and the American Cancer Society (ACS), indicate that mammography should be performed for all women as follows: (1) A baseline mammogram should be obtained between the ages of 35 and 40. (2) An annual or biannual mammogram between 40 and 50 years. (3) An annual mammogram after 50 years of age.

---

*Consulting Radiologists, Ltd., Abbott-Northwestern Hospital, Minneapolis, Minnesota.

Is Screening Affordable?

If the above recommendations are to be followed, it would indicate a need to screen a population of 46 million women aged 40 years and above. As one can see from the large number of females to be screened, these policies would indicate a large expenditure for purposes of breast cancer screening. It becomes apparent that present mammographic fees are excessive if one is to screen this large of a population in a cost effective manner. It has been previously estimated that, at present costs, it would cost approximately $61,000 per death averted if 100,000 women are screened. This accentuates the fact that current costs should be reduced and the radiology establishment has called upon its members to voluntarily reduce fees. The fact that the public is aware of the costs of mammography, and is interested in lower costs, is well illustrated by a recent breast screening program in the Chicago area that has been highly successful in recruiting asymptomatic women. Following a television news report that mammograms were to be offered for $50 at some 80 centers, nearly 19,000 women called the Illinois ACS to enroll in the program. This followed an earlier poll that indicated that $50 was an average price which many women stated would encourage them to have a mammogram performed.

Does Screening Help?

The answer to this question has been quite conclusively demonstrated by two large studies. One study was performed in the early 1960s (the Health Insurance Plan of Greater New York, i.e. HIP trial). In this trial, 62,000 women were voluntarily screened. A reduction in mortality of 33% was found among these screened women, however, this benefit appeared to be confined to women over age 50 at detection. This raised the question as to the benefit of screening women under 50 years of age. A more recent study (the Breast Cancer Detection Demonstration Project, i.e. BCDDP) was undertaken to again assess the utility of mass mammographic screening as it was felt that mammographic technique and interpretative expertise had improved since the early 1960s. This study evaluated 280,000 women with one-third of them from age 35 to 50 years old. This study again confirmed the decrease in mortality in patients over age 50, however, it also determined that in the 40 to 49 year old group with breast carcinoma, 35% of cancers detected were found by mammography alone. 13% were found by clinical exam alone and the remainder were found by both techniques. In this age group, fully 80% of all cases of cancer were stage I or less as was expected. Since the small cancers found exclusively by mammography represented the smaller cancers with better prognosis, it becomes obvious that mortality was significantly diminished.

Therefore, screening does play a significant role in reduction of cancer mortality in women with breast cancer. It should be stressed that mammography, *in correlation with clinical examination,* is the most effective way for screening for breast carcinoma. In the experience of Moskowitz, et al., 60% of minimal cancers would have been missed had the clinical examination been omitted.[6]

Radiation Risk

Assuming that screening does help and that the indications for mammography are followed, what is the possible radiation risk involved in this procedure? Largely unwarranted fears about mammography were generated in the mid 1970s and may ultimately lead to an increase in deaths from breast cancer due to underutilization of this important diagnostic modality. These concerns, however, have also stimulated an even greater improvement in mammographic technology and a greater reduction in radiation dose in recent years. Whereas 1975 average skin entrance doses of 1 to 2 rads were the rule, current state of the art mammographic technique exposes the patient to from .1-.2 rad mean glandular dose per two view examination. This represents a significant reduction in radiation exposure from the early days of mammography. The patient is, nonetheless, being exposed to ionizing radiation which does carry an inherent, albeit small, risk. To put this in perspective, comparative risks of radiogenic and naturally occurring breast cancers have been worked out as follows:

Age at Exposure (0.1 Rad)	Radiogenic Cancer, Lifetime Risk per 1 million Women	Naturally Occurring Cancers, Annual Incidence Per 1 Million Women
40	10	800
45	9	1400
50	7	1800
55	6	2050
60	4	2400
65	3	2700
70	2	2950

It becomes apparent when one studies the above Table that examination of one million women at age 50 might result in seven excessive cancers from radiation exposure. However, this is compared with a naturally occurring incidence of 1800 cancers, and if detected early in their course, many of these may be detected at a curable stage. Therefore, the known benefit from early detection of cancer should far outweigh the theoretical radiation risk. One should also note that the risk of radiogenic cancer induction in the older age groups is less than those in the younger age groups, and this is not because the breast is any less sensitive to radiation exposure in the older age group, but simply reflects the fact that older aged patients would not be expected to survive long enough for the radiogenic cancer to be expressed. This also points out the increasing benefit to screening older age females as the naturally occurring cancer rate does increase with age while the radiogenic cancer risk decreases with age.

The radiation risk is, therefore, extremely small and it can be equated with an equal risk if one travels 200 miles by air, 30 miles by car, smoking one-half of one cigarette, three-quarters of a minute of mountain climbing, and ten minutes of being a man aged 60.

How Sensitive is Mammography?

If one follows the American Cancer Society and ACR recommendations of screening and realizes that screening does help and that the radiation risk is low, how sensitive is mammography?

There is no particular difficulty in diagnosing the 2 cm. spiculated and irregular margined mass lesion with extensive microcalcifications as a probable carcinoma. However, this is not the stage that one would prefer to find a breast cancer as there is a worsening of the prognosis with increasing size of the cancer upon diagnosis. The breast cancer seen at age 55 probably had its origin at age 45 and it has been shown that it takes about six years for a lesion to develop 1 mm. and three more years for it to grow to 1 cm., at which time it tends to develop faster with greater possibility of nodal involvement. Therefore, it is the goal of mammography and clinical examination to find these cancers as early as possible.

Mammographic features of early breast cancer, then, include small clusters of calcifications sometimes without an obvious mass lesion, focal architectural distortion occasionally without a mass lesion, asymmetry of breast tissue, a single dilated duct, and occasionally as a developing density as noted over several mammograms.

Radiologists undertaking screening mammography realize the complex interplay between optimal technique, interpretation of subtle findings, and the philosophy of the referring physicians. If one is to utilize mammography to its fullest and therefore find the greatest number of early cancers, then great attention to detail is required. Many of the subtle findings can only be visualized when one uses a hand lens as microcalcifications at times are in the 150 to 200 micron size range. It should be realized that mammography is a highly sensitive technique, although not entirely specific. It is this lack of specificity which leads many clinicians to believe that mammography is not as valuable as the ACS would lead us to believe. It is important that radiologists and referring physicians adopt similar policies and philosophy towards the goals of early breast cancer detection. This includes an increased number of breast biopsies, even though one is dealing with minimal findings on the mammogram. It is in this stage of cancer development that one wants to diagnose the cancer and therefore increase survival rates of the patient. An aggressive approach as adopted by Moskowitz and others has yielded one out of sixteen biopsies positive for carcinoma in the 35 to 39 age group, one out of eight biopsies positive for carcinoma in the 40 to 54 age group, and one out of three biopsies positive for carcinoma in the age group over 55. Although these numbers may seem excessive, particularly in the younger age group, the goals of early breast carcinoma detection should be kept in mind. Just as the surgeon does not expect to find a cancer in every palpable lump that is biopsied, so should the clinician realize that subtle abnormalities on the mammogram don't always yield a cancer. In fact, recent studies by Homer, et al, have shown a comparable percentage of positive biopsies in palpable lesions vs. non-palpable minimal mammographic findings. This emphasizes the need to biopsy minimal mammographic abnormalities in patients without a palpable abnormality.

Conclusion

Breast cancer is a highly prevalent, however, potentially curable form of cancer if detected in its early stages. Screening has been proven to help in detection of early cancers and therefore it has been demonstrated to decrease mortality. It can be done cost effectively with very little radiation risk involved. The onus is upon the medical establishment to decrease costs as well as increase screening of the susceptible population.

References on page 216.

Letters to the Editor

Dear Editors:

The Price of Life: Ethics and Economics

The term "activists" as I used it in my editorial* pertaining to the document "Life at Any Price: Ethics and Economics" denotes people who act on their beliefs and is not intended as a perjorative term. The activists that I am concerned about are not the ad hoc group that met for over a year but rather those people in the Coalition for Health Care Cost Containment who commissioned and wrote the document. These are very fine people in every way, but in my opinion they do not understand medical care at the operational level. They are not alone in their beliefs regarding medical care, but are amongst an ever-growing number of people who regard medical care as it is being delivered in this country as being one of our prime social problems. They have the intelligence, energy, and wherewithal to make changes in our system and are intent on doing so. The changes they envision are not just to save society money while getting the same service, but to significantly alter the medical service which will be available to the American public.

It is because of the above consideration that I feel it is imperative for the medical profession to inject a note of reality into this dialogue. The paper, in my judgment, contains many errors and internal contradictions. Apparently my editorial was not written in a fashion to help Mr. Graven to understand my main concerns. Following is a brief and incomplete list of these concerns.

1. The paper isolates medical technology form its reality. In this process medical technology is deprived of credibility as an economic force, as a major factor in the improved health and longevity of our people, and as a legitimate basis for hope for still better health in the future. A technology assessment system which is concerned primarily about access to care, ethical considerations and cost factors and which functions as a centralized bureaucracy as this paper calls for is guaranteed, in my judgment, to choke off further technology development to a snail's pace. That, according to the philosophy expressed in the paper, is the purpose of the proposed arrangement. We should also bear in mind that the paper calls for the reassessment of existing technologies by similar criteria.

2. It fails to understand the relationship between treatment of acute and chronic illness and the process of prevention of illness. By simplistically equating the amount of expenditures devoted to the care of the sick as compared to the amount of expenditures for the prevention of disease with an attitude of bias on the part of the medical profession against the prevention of illness, it assumes an adversarial relationship where none exists in reality.

3. It correctly addresses the treatment problems at the end of life as being difficult, but it makes no distinction as to the age at which the end of life occurs in a given individual. Are we to behave the same way toward a thirty-year-old person who has acute leukemia with a ninety-five-year-old person with pneumonia? By reducing the aggressive treatment of "acute and chronic disease" it would seem to abandon many sick people who could be helped. If we are to maintain a humanitarian attitude and find compassionate solutions for the problems involved in the care of the dying, we would seem to be well advised to heavily involve the medical profession in the dialogue and decision making process, but by categorically stating that physicians are ill-equipped by their very nature and training to deal with this area, physicians would seem to be excluded from further meaningful participation.

It is possible that I may be in error in some of my interpretations regarding this document, but of one thing I am certain. We as a profession face a real struggle to maintain any position of influence on decisions pertaining to what we will be allowed to do for our patients. We must take any opportunity to discuss the issues raised by the Coalition document publicly and seek to inject an understanding of reality in the further considerations of these difficult areas of medical care in which we are uniquely qualified to help the public obtain the kind of medical service they truly want.

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*Page 145, February, 1985

Donald C. Bell M.D.†
Minneapolis, Minnesota

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†Member of the Task Force "The Affordability of New Technology and Highly Specialized Care: Life At Any Price".

Dear Editor:

Doctor to Doctor

Are we physicians communicating less with each other, particularly when we are paid by different pipers? There is a potential for decreased communication about individual care plans and patient history when physicians do not belong to the same reimbursement pool. The potential for prescribing medications without a comprehensive history of involvement with other physicians and a tendency to disregard previous evaluations, prescriptions, and other ongoing treatment plans contribute to fragmentation and a decrease in quality of patient care.

As a psychiatrist in private practice, I am struck by the lack of communication, doctor to doctor, when important and expensive medical care decisions are being made. We are ethically bound, I believe, to share relevant information about our patients with other physicians who may be involved in their care. So we should be available by phone and encourage calls and communications.

It is not sufficient to write an order to "obtain old records" when a patient is new in the clinic or admitted to the hospital. If critical care decisions are being made without the advantage of a colleague's previous involvement, previous laboratory examinations and tests, etc., we are not giving our patients our best.

Concerning matters of confidentiality and privacy, the physician should explain to his patient the need and importance of obtaining information from other physicians and health care providers as part of the diagnostic assessment. I have never failed to learn a good deal about my patient when this issue was raised initially, and usually I am able to obtain very helpful observations and experience from colleagues.

Despite our "competition" for patients in this wonderland of shifting payor mechanisms, our primary responsibility is to good care planning. Our patients deserve no less than attempts to contact other doctors directly, and when we are contacted to respond quickly and joyfully.

Lee Beecher, M.D.
Minneapolis, Minnesota

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Death with Dignity

A Personal Look into a Major Moral Conflict for the Physician in Today's Society

ARTHUR J. MATAS, M.D.*

Death with dignity has become a major theme. Countless newspapers and magazine articles describe "human interest" situations and call out for an improved approach to the terminally ill.

"DEATH WITH DIGNITY" has become a major theme. Countless newspaper and magazine articles describe "human interest" situations and call out for an improved approach to the terminally ill patient. There has been an outpouring of journals, texts, reviews, and symposia on medical ethics with an associated discussion of the humane death. The widespread examination of this concept activates a major moral conflict for the physician. Physicians are taught to attempt to heal or to prolong life. The "death with dignity" ethic suggests that, at least in some situations, life should be allowed to end. In this article, I will review and attempt to reconcile this conflict.

At the outset, it should be noted that a review in this area is confused by two factors. First, different authors write from different occupational vantage points, e.g. lawyers state that euthanasia is illegal. Second, different authors base their writing on their individual moral code. These codes (which may be religious, legal, social folklore, professional, familial or personal such as an intuitive belief in right, humanism, utilitarianism or personal happiness) may differ so much in their underlying texts that any reconciliation of the opposing points of view is impossible. One needs to define one's own code. In this article, I will present an argument for individualization of the care of each patient. In developing this argument I will review the history of attitudes toward death in Western Society, the origin of the current conflict, and recent court decisions that have helped define the legal aspects of "death with dignity".

History of Western Attitudes Toward Death and Dying

One of the oldest references to attitudes toward death comes from the Old Testament, Ecclesiastes, Chapter 3:

> To everything there is a season,
>   and a time for every purpose under Heaven.
> A time to be born, and a time to die;
>   a time to plant, a time to pluck up that which is planted.
> A time to kill, and a time to heal;
>   a time to tear down, and a time to build.

The average lifespan at the time this was written was less than 30 years and, death clearly was accepted.

In Greeco-Roman culture, the primary function of physicians was preserving or restoring health. A constant motivation was "to help or at least to do no harm". Pausanias, the King of Sparta (408-394 BC), stated that the best physician was the man who did not cause his patients to linger on, but buried them quickly. Plato opposed any effort on the part of physicians to prolong the lives of patients who had no chance of regaining their health. In the Art, in the Hippocratic Corpus, medicine is defined as having three goals: (a) doing away with the suffering of the sick (b) lessening the violence of their diseases and (c) refusing to treat those who are overmastered by their diseases[1].

Prior to and during the middle ages most illnesses and wounds were fatal but death rarely came suddenly. Thus man was usually forewarned of his death, and knowing that it was near, he was able to make final arrangements[2]. The death bed scene was ritualized — one awaited death lying down and, once prepared, the dying person would: express sorrow over the end of life, pardon his companions who surrounded the deathbed, forget the world, think of God and ask for forgiveness and finally, await death. Importantly, the scene was presided over by the dying person. It was a public ceremony and it was essential that parents, children, friends and neighbors were present. The ritual was the same when the dying person was a child. The ceremony was simple and there was no great show of emotion.

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The corpse itself was not respected, and as long as they were buried in a churchyard, people did not care what happened to their bodies. There were no coffins, and when a grave was dug and old bones encountered, they were discarded (e.g. Shakespeare: Hamlet, the grave digger). From the fourth century onward, people danced in cemeteries, often naked, frenzied and brandishing swords[3]. Death was an occasion for affirming the joy of being alive. Despite the objection of the church, the cemetery remained a meeting ground throughout the early middle ages — a place to do business, to dance and gamble. Physicians during this time served as prognosticators. The physician was not to prolong life but was to tell the patient when he was dying.

In the 11th century a new concern for the individual developed — a major difference from the previous idea of the collective destiny of the species[2]. The concept of being judged at one's death is first evident in art, and pictures from the time depict angels and devils in the bed chambers fighting over the soul. There was a return of funeral inscriptions; the development of eulogies on tombs; and masses offered for dead individuals. By the 14th century death had become a meditative introspective experience. Art from this time showed people dancing with mirror-image corpses — the thought being that in the shape of his body each individual carries his death with him and dances with it throughout life. Death bed scenes remained similar.

In the 15th century, death began to be conceived of as being autonomous; and in art, death co-existed as a separate agent at the bedside. Death became known as an independent figure who called for each man, woman and child. It is at this point that the famous Danse macabre pictures in which death is pictured as a skeleton were first published.

In the 16th century a major change occurred. Death began to be seen, not as part of the natural order of things but as violent, irrational rupture of daily life[3]. Death ceased to be thought of as a transition into the next world and the accent was placed on the end of life[2]. The concept of being judged at one's death becomes important and death is thought to be followed by either a frightful punishment in Hell or the totally unmerited gift of Heaven. The Ghost in Hamlet reflects prominent tears of the time:

> "But that I am forbid to tell the secrets of my prison house,
> I could a tale unfold whose brightest word
> Would harrow up thy soul; freeze thy young blood;
> Made thy two eyes, like stars, start from their spheres;
> Thy knoted and combined locks to part,
> Like quills upon the fretful porcupine:"[4].

The family now begins to take responsibility for the rituals of death. The doctor's role has not changed. Physicians were expected to recognize the traits that indicated the patient was dying.

Gradually during this time period the Bourgois family arose. Those who could afford it, paid to keep death away. Francis Bacon, at the beginning of the 17th century was the first to speak of prolongation of life as a new task for physicians. He divided medicine into three offices stating: "First, the preservation of health; second, the cure of disease and third, the prolongation of life . . . this is a new part and deficient, although the most noble of all[5]".

By the 17th and 18th century, death was conceived as something which happens to someone else. The family was expected to not only accept the ritual of death but also to show great emotion. Death, unless coming to those both healthy and old was increasingly thought of as a transgression, tearing man from his daily life. The acceptance of death was increasingly difficult for the survivors. Whereas the dying person continued to play the leading role in deathbed scenes, the bystanders now participated more actively. Emotion shook them, they cried and prayed. This climaxed with the "hysterical" mourning seen in the 19th century. During this time the physician renounced his role as prognosticator and spoke only when questioned.

Recently there has been a dramatic change in western attitudes towards death — death has become as almost shameful and forbidden. This has arisen due to a number of factors[2]: (1) the desire to spare the sick person the gravity of his condition; (2) better medical care, increased longevity and resulting decreased familiarity with death. Life expectancy in the tenth century was less than 30 years, in the fourteenth century it was about 30 years and in the 17th through the 19th century about 40 years. Only in the last half century has there been a dramatic change. (3) displacement of the site of dying to the hospital, and (4) the modern concept that one must avoid, for society and the dying person, the emotion caused by the ugliness of dying and the very presence of death in the midst of a happy life.

The death bed scene has now passed to the doctor and the hospital. They are the masters of the "acceptable" death i.e. — one that can be tolerated by the survivors. In his book, *Reflections on America*, Jacques Maritein[6] describes the good American death: "the medical staff induces in him a kind of dreamlike state in which he thinks that to die amidst the smiling faces and these uniforms, white and emaculate like the wings of angels, is a genuine pleasure, or at least a moment of no consequence".

The American Sociologist Geoffrey Gorer[7] has noted in his article "The Pornography of Death" how death has replaced sex as the great taboo. Formerly children were told they were brought by the stork but were admitted to the great farewell scene about the bed of the dying person. Today they are initiated in their early years to the physiology of love but not told of grandfather's death.

The Conflict Today — Death with Dignity

How does the evolution of ideas on death and dying lead to a major conflict regarding the care of the dying patient? In my opinion, a major part of the conflict has arisen because of the transference of the death bed scene to the hospital. Most deaths today occur in the hospital. However, this is contrary to our concept of the hospital's function in today's society. Fundamentally the hospital and its staff are committed to healing. Thus, in the midst of current technological emphasis on healing, the patient who is dying is perceived as a failure[8]. Therefore, undue effort has been made to prolong life even for a few hours or days. How many of us have thought, when on-call or heard nurses say that they did not want a dying patient to die on their shift. Yet it is clear that current technology, even when it cannot cure or prolong worthwhile life for a short time, can still put off the terminal event of death beyond the point where the patient himself may value the life thus prolonged, or even is still capable of valuing at all. This creates a therapeutic stage where the line between life and death coincides with that between continuance and discontinuance of treatment[9].

A second problem arises in that the hospital, for maximum efficiency has routinized the process of patient care at the expense of personal dignity. This is exemplified by the admissions process where the patient must wait at the Admissions Desk, fill out forms, receive a plastic name tag, surrender his possessions and put on a hospital gown. The dying persons' needs cannot be translated into routines and rituals. It is in the fundamental sense that the dying patient threatens the hospital and its personnel. The routine orders, the predictable activities, when applied to the dying patient cease to be meaningful, and above all cease to be satisfying to either the people doing them or to the patients receiving them[8]. Finally, as part of the culture, patients are made to feel dependent on the physicians and to feel that they should be grateful for their care. This feeling is widely shared by patients and one that doctors and nurses have come to accept. The patient who does not exhibit gratefulness violates the hospital culture. If one look at this in terms of the five stages of dying as described by Kubler-Ross — Denial, Rage or Anger, Bargaining, Depression and Acceptance — these do not fit well into hospital culture[10].

As a result of current attitudes to death, in association with the conflicts of dying in the hospital environment, the dying have frequently been isolated in terminal wards, or in solitary rooms where they are visited only rarely. Extraordinary efforts have been made with modern technology to prolong their lives[11]. Many have been misled about their prognosis, and survivors have been crippled in their efforts to deal with their grief by their refusal to foresee the reality of death. As a consequence of these conflicts, the death with dignity movement arose.

What Is Meant by the Concept of "Death With Dignity"? First, it is not applied to the moment of death, but describes the process of dying. Second, unlike the Middle Ages when one conducted one's own death bed scene, dignity is now, at least partially, conferred upon one's death by many others involved. There is no real nobility nor dignity in dying but we can convey the liberty to die with human dignity. The possibility of dying with dignity can be said to be diminished by many intrinsic and extrinsic ways: e.g., coma, senility, unbearable pain, madness, denial, cowardice, isolation as well as by excessive and impersonal medical and technological intervention[12].

How Does This Concept Translate into Patient Care? To be simplistic, it means a humane caring attitude which permits the dying person to die without interfering with his privacy or human dignity: or as Oliver Wendell Holmes is quoted as having said to a physician, "Don't just do something, stand there!"[13].

What then needs to be defined are the limits of "allowing" or "helping" a patient to die. This has been discussed in the literature under the heading "euthanasia". Originally derived from the Greek and meaning "painless happy death", euthanasia has been divided into "active" versus "passive" or "direct" versus "indirect", active or direct being an act of commission resulting in death; whereas in passive or indirect euthanasia death results from acts of omission. That is, the patient dies from his disease process but his life could have been prolonged.

There is a continuum of arguments on this issue running from the "right to life" and vitalist point of view that all signs of life are worth preserving, and the legal point of view that all active and passive euthanasia is murder, to the arguments of some authors favoring both active and passive euthanasia. Clearly from the theoretical moralist point of view, there is little difference between active and passive euthanasia — the goal is the same; the end is the same. However, I think there are other practical considerations which rule against adoption of a policy of active euthanasia. I will discuss these later.

Where acts of commission are easy to define, acts of omission are more difficult. When is a specific act for which we are trained to do e.g. putting a patient on a respirator, required and when can it be omitted in the interest of the patient? To help answer this question some authors have differentiated between "ordinary" and extraordinary" treatments. A major Catholic Church statement on this issue was made by Pope Pius XII in 1957 as follows: "Normally one is held only to use ordinary means according to the circumstances of persons, places, times and cultures; that is to say means that do not involve any great harm for oneself or another"[14].

Again, use of these terms raises certain new problems. What was extraordinary ten years ago may be ordinary today. What is extraordinary in one hospital may be routine treatment in another. The best solution in my mind to this conflict has been provided by Paul Ramsey who has defined extraordinary as "useless". He asks "even if treatment is ordinary for a specific patient, is it obligatory?" and states that there is no duty to use useless means however natural or customary in practice[15]. Recently the Catholic Church has updated their statement. In a document issued by the Sacred Congregation for the Doctrine of the Faith and approved by Pope John Paul II, the Church states: "When inevitable death is imminent in spite of the means used, it is permitted in conscience to take the decision to refuse forms of treatment that would only secure a precarious and burdensome prolongation of life, so long as the normal care due to the sick person in similar cases is not interrupted".

In reality, passive euthanasia is widely practiced in America today. No code orders are left on charts. Patients are not started on questionable treatments that may prolong their suffering for a short time, and, in fact, aggressive treatment is frequently stopped at the request of the family. In Europe such practices are even more widespread. For example, in a recent case report in the *Journal of Medical Ethics* a physician from Great Britain described not starting Digoxin on a patient with presenile dementia who developed congestive heart failure[16].

In contrast, however, we still see patients who die at the end of a long course of invasive treatment consisting of multiple operations, intravenous feedings, blood drawing, respirators, etc. Their prolonged hospitalization and ultimate demise cannot be said to be associated with dignity. In addition, the family suffers tremendously in these situations. Many of these situations are going to remain with us, because at no point until the end of the hospital course can the outcome be predicted.

If we accept the concept of a right to "death with dignity" we must determine criteria by which to distinguish between those circumstances in which life must be protected and those in which it may be terminated. Many authors have tried to define "Quality of Life" criteria. Two different states have been described, the presence of which may suggest that life is of such poor quality that it is questionable that it is worth living. The first is pain — if a life is deprived of a reasonable hope for happiness because of overwhelming pain, then the individual in question may prefer death. Obviously use of this criteria alone as a reason for withholding treatment raises serious problems. There are relatively few patients who are near death and in intractable pain. The real conflict arises when such large doses of analgesics are required to control pain that it is recognized that this heavy narcotic use will shorten life. The second criteria is some Standard of Awareness. The human being who is unconscious or unaware of his surroundings, who engages in no activity, and for whom there is no prospect of change, also challenges our notion of the absolute value of life.

The most important aspect in my mind is our attitude towards the situation. Each patient must be approached individually as to what is best. "Best for the Patient" should be defined in terms of a value system that puts humanness and personal integrity above biological life or function. Economic, scarce resources and social aspects are not to be considered. "It is crucial that the ethic of allowing a patient to die be based solely on consideration of the welfare of the dying patient himself. It is one thing to take one's bearings from the patient, his interests and attitudes, to protect his right to a good death against the onslaught of machinery and institutionalized loneliness; it is quite a different thing to take one's bearings from the interests or the costs and benefits to, relatives or society"[12]. Whereas, the patient is of prime consideration, it is important to keep the family informed. Ideally, the family should be involved in all decisions. One cannot suddenly tell a family that all active intervention is to be stopped. This is especially important for patients on a gradual downhill course or who slip in and out of consciousness.

Although, as is clear from the foregoing, I believe that there is a role for passive euthanasia, some caution is necessary. An important concept is developed by one author, Arthur Dyck[17]. He stresses that life has some value whatever form it takes, and that the injunction "Thou shall not kill" continues to have wide moral and social concensus. As such, he feels that the onus is on those who believe that a person should be allowed to die to give stringent and compelling reasons for their belief. He does not accept an appeal to "human dignity" as a justification for euthanasia as there are serious and widespread differences between people about what constitutes human dignity. He states that the debate concerning what constitutes human dignity cannot be easily resolved. There are deep philosophical and religious differences that divide people on that issue. However, the injunction not to kill is not devisive in that way. He feels that much of the emotion generated by the debate over euthanasia finds its source in the understandable and deep uneasiness that many individuals feel when they are asked to move away from the stringent notion of restraining from the acts of killing, regarding which there is widespread agreement and to make judgments about who shall live and who die on the basis of conceptions of human dignity regarding which there are deep religious, ethnic, philosophic and other differences. With this in mind, we cannot forget the conclusions reached by Leo Alexander, the leading scholar of the atrocities of medicine in Nazi, Germany: "whatever proportion these crimes finally assumed, it became evident to all who investigated them that they had started from small beginnings . . . it started with the acceptance of the attitude . . . that there is such a thing as life not worthy to be lived . . . its impetus was the attitude toward the non-rehabilitatable sick"[18].

What About Active or Direct Euthanasia? Although, as I discussed before, from a moral point of view there is little difference between active and passive euthanasia. There are some serious practical considerations which to my mind argue against a policy of active euthanasia. These include: (1) Moral life in Judeo-Christian culture has been guided by the Ten Commandments, one of the strongest being: Thou Shall Not Kill. Thus, there are strong ethical and psychological barriers against killing. (2) There are limits to human judgment. (3) The trust between physicians and their patients is better protected. For example, would you want an advocate of active euthanasia to be your physician? (4) The possibility of weakening the "healing" goal of medicine. Paul Ramsey asks, "Can a doctor and can medicine as a rule of practice admit that a patient is beyond earthly care and so warrant as a practice positive actions that accomplish or hasten his death while not weakening medicine's life-saving mission. . . . Would the doctors who are the moral agents in these exceptional acts of killing the dying . . . be corrupted by them and medicine's impulse to save be weakened.[25]" (5) Possibility of abuse.

I would conclude for the above reasons that although there is little moral difference between active and passive euthanasia, we should not adopt a policy favoring active or direct euthanasia.

Court Decisions

If we accept the concept of death with dignity and limit it to acts of omission (passive or indirect euthanasia) the situations and mechanisms for implementing this "lack of treatment" need to be defined. There is little conflict where the patient is alert and competent. The right of competent patients to refuse treatment, which would not only be life prolonging but also life saving, has frequently been confirmed by the courts. This has been seen repeatedly in cases involving adult Jehovah's Witnesses refusing blood transfusions as well as in the Candura decision[19] in which the right of a competent patient, who was not terminally ill, to refuse a life saving amputation of gangrenous leg, was affirmed. Thus when the prognosis is clearly grim, and the patient (and family) understand and agree that temporizing life prolonging measures should not be implemented, the situation is clear.

The situation becomes much more complex when the patient is incompetent. Recently, a number of such cases have been presented in the courts and a body of law is evolved on when decisions can be made not to treat the incompetent patient and who should be responsible for these decisions. These cases are currently being taken to the courts because it is only by going this route that physicians can be provided with civil and criminal immunity.

The first case which received national attention was that of Karen Ann Quinlan. Briefly, this 22 year old female ceased breathing one night for at least two 15 minute episodes. She received mouth-to-mouth resuscitation from friends and was taken by ambulance to a local hospital. On admission her pupils were unreactive and she was unresponsive to deep pain. Over the next few days she was maintained on a respirator. Neurologic exam revealed a decorticate comatose patient. Electroencephalogram was markedly abnormal but showed some activity. Brain scan, angiogram and lumbar puncture were normal. She was clearly not brain dead but was characterized as being in a "chronic persistent vegetative state." The case was taken to court when Karen's father, Joseph Quinlan, petitioned to have her judged incompetent and have himself appointed her guardian with the intention of discontinuing all extraordinary medical means and removing her from the respirator. Her physicians did not wish to turn off the respirator as there was no evidence of brain death, and at the time it was felt that removal from the respirator would rapidly result in her death.

Eventually the Supreme Court of New Jersey appointed Joseph Quinlan as Karen Ann's guardian with full power to make decisions about her medical care.[20] The court stated that if the responsible attending physicians and the hospital ethics committee concluded that there was not hope of Karen ever emerging from her present comatose condition to a cognitive, sapient state, the present life support systems could be withdrawn.

The judgment was significant in that it determined that under certain circumstances, a patient has a legal right to die.[21] The court authorized the removal of a life sustaining apparatus despite medical testimony that such actions would be contrary to established medical practice. The court rested its decisions on Karen Quinlan's right to privacy, which the court said included the right to be free from the bodily invasions which treatment of her condition involved. The court specifically limited the exercise of an incompetent's right to privacy to the particular facts of the case. It was important to them that the patient was a previous competent individual who had become incompetent because of an illness and had no reasonable hope of ever returning to her former cognitive life.

The court appeared to try to balance two interests — the patient's right to privacy versus the State's interest in protecting lives. They felt that as the medical expectations of recovery diminished, the State's overriding interest in preserving human life weakens accordingly. Thus, in the Quinlan case the assertion by a parent of the patient's constitutional rights of privacy outweighed the State's strong interest in preserving life where life sustaining treatment would necessitate continuous and substantial interference with bodily privacy and where there was no medical expectation of recovery.

The second major case was that of the Superintendent of Belchertown State School et al. versus Joseph Saikewicz.[22,23] Joseph Saikewicz was a 67-year-old-patient with an IQ of 10 and a mental age of two years. He had been institutionalized all his life and was unable to communicate verbally. He was diagnosed as having an acute myeloblastic leukemia; the only treatment was chemotherapy which offered a 30-50% chance of remission lasting two to 13 months. The treatment has serious side affects, most significantly pain and discomfort. Because Saikewicz would not understand the reason for the pain, physical restraint would probably have been necessary during the weeks in which the drug was administered. Left untreated, he would have probably lived several weeks or months and died without pain. The superintendent petitioned the court to appoint a guardian with the power to refuse treatment. This was done, and patient died six months later.

This case differed at a very basic level from the Quinlan case. In the Quinlan case, the patient was incompetent as a result of an acute event, and would never return to her former cognitive level. Saikewicz's incompetence was due to his retardation and treatment would prolong his life at an unchanged cognitive level but at the price of pain that he would not understand. The court's written decision, published after Mr. Saikewicz's death, dealt with three main issues: (a) The right of any person competent or incompetent to decline potentially life prolonging treatment. (b) Legal standards that control the decision whether potentially life prolonging but not life saving treatments should be rendered to an incompetent. (c) Determining the proper procedures.[24]

Four state interests were defined. (A) Preservation of life, (B) Protection of the interests of innocent third parties, (C) Prevention of suicide, and (D) Maintaining the ethical integrity of the medical profession. The court ruled that equity demanded that incompetent persons have the same right to refuse treatment as competent patients have. They ruled that statistical factors indicating that a majority of competent patients similarly situated would choose treatment does not resolve the issue stating, "individual choice is determined not by the rule of the majority but the complexities of the similar situation viewed by the unique perspective of the person called to make the decision.[22] The court used a doctrine of substituted judgment — trying to decide what the patient would do if he could make the choice for himself stating that if Saikewicz had no capacity to understand his situation or prognosis the situation should be compared to the competent individual simply told something very painful will be done to him over a long period of time for reasons he will not be told and for an end he would never understand. Using this doctrine the court ruled that treatment should not be given. Although this ruling by the court seems to me to be reasonable, it has been criticized in the literature specifically by Ramsey[25] in that it treated the patient as if he was a competent patient who would then take into account the fact that he was competent: "It brain twistingly allows the incompetent lucidly to take into account his incompetence in exercising an absent capacity to refuse treatment."[25] However, the doctrine of substituted judgment seems to be easily applicable to other cases.

The third issue dealt with by the court was determining proper procedures. The court decided that each case should go before the probate court and that judges are the only people to decide cases of life and death with legal immunity.

This case was important in that Mr. Saikewicz's competence was the result of his retardation not his illness. If his life were extended, he could have continued to lead the cognitive life he had always led. This case set a precedent of supporting the right to die for an incompetent patient who had never expressed the wish to die, whose illness had not progressed to a point where he left his previous cognitive sapient state, whose illness was potentially reversible, and where a majority would choose therapy[23]. Again, however, it appears that the right to privacy was weighed against the right to life.

A major problem was created in the state of Massachusetts by the courts' third ruling that all cases of removal of life support systems or discontinuance of life extending therapy in otherwise dying patients who are incompetent must go before a probate court[26]. This has been partially resolved by other court cases. For example, in the case entitled, "In the Matter of Shirley Dinnerstein[27]," it was ruled that judicial approval is not required for a "no code" order in an irreversibly terminally ill incompetent patient. Shirley Dinnerstein was a 67 year old widow suffering from advanced terminal Alzheimer's disease and a life threatening coronary condition who had been hospitalized after a stroke. Her son and daughter concurred with the attending physician about the appropriateness of a no code order. The court ruled that the decision to enter a no code order presents "a question peculiarly within the competence of the medical profession of what measures are appropriate to ease the imminent passing of an irreversibly terminally ill patient in light of the patient's history and condition and wishes of her family". This decision was the first in the nation to uphold the validity of the "no code" order[28]. In addition, it also clarifies the Saikewicz decision by interpreting it to apply only to the life saving or life prolonging treatments administered for the purpose and with some reasonable expectation of affecting a permanent or temporary cure or of relief from the illness or condition being treated.

Two more recent cases illustrate the difficulties in defining widely applicable guidelines. An example of how each situation may have individual characteristics is found in the case of Earle Spring[29]. Earle Spring was a 78-year-old senile nursing home patient who had developed renal failure requiring dialysis. He had led a normal active life prior to becoming senile. His wife and son wanted dialysis discontinued. Treatment would have been life prolonging but would have been invasive and the patient would not have understood the reasons. This case was somewhat like Saikewicz. But, Mr. Spring's cognitive level had deteriorated, not due to renal failure, but due to senility. Dialysis would not restore Mr. Spring to his former cognitive state. The Supreme Court of Massachusetts ruled that treatment could be discontinued, but specifically warned that each subsequent case must be decided individually[29].

The second case, that of Brother Fox has aroused controversy because the courts, in addition to deciding on the specific case, attempted to set up procedures for deciding all future cases[30,31]. The court studied a petition to discontinue a respirator on an 83-year-old religious brother who had had a heart attack and suffered significant brain damage while undergoing minor surgery. Consulting neurosurgeons agreed that there was no reasonable possibility that he would ever regain consciousness. Thus the case was similar to the Quinlan case — because of an acute event, the patient was in an irreversible coma.

The trial court granted the petition to discontinue the respirator. The District Attorney appealed and the Appeals Court upheld the original decision[32]. Importantly the Court stated that it gave great weight to a written "living will" or to prior statements given by the patient (in this case the patient had previously stated that he wanted no "extraordinary means" to sustain him). However, the Court has been criticized for stating that all such cases must be decided by the courts and setting up a cumbersome stepwise process to reach these decisions. In other words, a minimum of four to six physicians, five attorneys, and one judge are now required for permission to withdraw extraordinary life supporting systems from a terminally ill, chronically vegatative patient . . . to answer a question that . . . ought never to have been brought to court[32].

This is an area that is relatively new to the courts and the law is evolving. Unfortunately, such a process is time consuming. Many of the above cases were in the courts for months before a decision was reached. Taking months to decide each case is contrary to intentions of "death with dignity" as the patient's life is prolonged while the courts debate the issue. In two of the above cases, the patients died months after the petition was filed, but before the courts had reached their final decisions. Hopefully, broad guidelines will evolve with an emphasis on concern for the patient and his family. Such guidelines will need to be broad as each case has individual characteristics. However, the mechanism for implementing such a practice should not be so cumbersome that it takes months and therefore defeats the whole purpose — our concern and care for the individual.

Conclusions

Finally it is important to note that there are many other issues that are interwoven and entwined with those that were discussed, not the least of which are economic and utilization of limited resources. I have also not discussed the specific situations of newborn infants, living wills, quality of life and the hospice movement. As I stated in the introduction, any attempt to come to grips with the "death with dignity" concept must be based on a personal underlying moral code. From this review, I would conclude:

1. "The death with dignity movement" has arisen due to the conflict that developed when the site was moved to the hospital.

2. Of major importance is our concern and care for the patients. In some circumstances that care might be best manifested by limiting treatment. Each case must be decided individually.

3. There are practical considerations that prevent the development of a policy of active or direct euthanasia.

4. These decisions become more complicated when dealing with incompetent patients.

5. In my opinion from reading the literature many of the conflicts and the emotions involved are not appreciated by those not involved with patient care. Therefore, I think it is important for all physicians to be aware that these issues are being discussed at length in current ethical literature. The decisions that are being made are going to affect patient care standards for the future, and we should be available to participate actively in this decision making progress.

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Minnesota Medical Association

A Smoke Free Society by the Year 2000*

I SUSPECT THAT some of the larger tobacco companies took another look at George Orwall's highly publicized book during 1984 after saying to themselves, "Maybe George got his terms mixed up; but, nevertheless, they seem to be out to get us; let's double our advertising budget again."

A Smoke-Free Society by the year 2000? Are we kidding? Well, we are, to the extent that we are not advocating making tobacco products illegal or unavailable, and we continue to believe that adults addicted to tobacco should remain free to practice their addiction in private, or with other consenting adults. But other than that, we are serious, we are determined, and we are optimistic that by the year 2000, tobacco smoking, like measles, will be a former, not a current, public health problem.

Why the year 2000? Well, for one thing tobacco smoking did not become a major public health problem until the onset of the 20th century. Let's try and limit this greatest single preventable public health problem to the current century. Admittedly in the early 1900s society in general looked at smoking as a somewhat filthy, but otherwise benign habit. By the late 1940s extensive evidence had accumulated implicating tobacco smoking with the rapidly increasing number of deaths from lung cancer. Certainly by the time of the 1964 Surgeon General's Report, no open-minded person could fail to be troubled by the statistics contained in his report. Since 1964 several newer epidemiological studies and additional Surgeon General's Reports have clearly delineated the increasing physical and economic toll occurring in all developed countries, as a result of tobacco smoking. Here in Minnesota tobacco smoking now accounts for approximately 5,000 deaths per year along with 39,000 person years of disability per year. The total economic costs of tobacco smoking in Minnesota are not known, but the best available statistics indicate a direct expenditure of $374 million dollars per year for medical costs incurred in caring for victims of lung cancer, emphysema, heart disease and other tobacco-related illnesses.

Hopefully history books published in the 21st century will deal kindly with those of us living during the 1980s for we are living in a society which not only allows, yea, it even widely promotes the sale of a product which causes widespread lung cancer in men and women; yet real concern by our society resulted in the removal of an artificial sweetener from the market a few years ago because there was questionable experimental evidence that this artificial sweetener caused bladder cancer in rats, and might conceivably do the same in humans. How do we explain this erratic behavior on the part of our society?

Let's go back to our target year for a smoke-free society. Where did the year 2000 concept originate? Well, approximately four years ago a physician and his spouse from Minneapolis toured Scandinavia. The physician's spouse was especially impressed by a recently adopted Norwegian Program to create a smoke-free society by the year 2000. She brought this concept back to Minneapolis. The idea was discussed among members of the Hennepin County Medical Auxiliary. A resolution was introduced and passed requesting that the Hennepin County Medical Society adopt a Smoke-Free Society-2000 Resolution. This was accomplished. The Resolution was introduced and passed during the Minnesota Medical Association's Annual Meeting in 1983 and sent to the AMA. Within two months the resolution was adopted by AMA. A similar resolution was introduced at the Minnesota Public Health Association's Annual Meeting in 1983. It was adopted with minimal debate and sent on to the American Public Health Association's Meeting in Dallas where it was adopted in November of 1983. With encouragement from the AMA and the APHA our Surgeon General studied the resolutions, and in May of 1984 called for the commencement of a national campaign of action to achieve a Smoke-Free Society by the year 2000.

We in Minnesota have not been satisfied with simply witnessing the adoption of a Smoke-Free Society-2000 Resolution by our National Organizations. Those of us working in the areas of health care, public health, preventative medicine and health promotion recognize that individually we have little chance of accomplishing our goal within the foreseeable future, but with a united front our chances of success are markedly improved. During 1983-84 the Minnesota Medical Association's Committee on Public Health hosted a number of meetings to debate the pros and cons of developing a "coalition effort" to achieve a smoke-free society. Our efforts bore fruit. On September 21, 1984, the Minnesota Coalition for a Smoke-Free Society 2000 was incorporated. Sponsoring members are: The American Cancer Society, Minnesota Division; The American Heart Association of Hennepin County; and the Physicians' Association of Minnesota; The American Lung Association of Hennepin County; and the Physicians Philanthropic Foundation of the Minnesota Medical Association.

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In addition to the above sponsoring organizations a number of governmental and private health agencies have indicated an interest in being affiliated with the Coalition including the Minnesota Department of Health, The Minnesota Department of Education, The Association for Non-Smokers-Minnesota, The Minnesota Public Health Association, The Minnesota Coalition on Health Care Costs, A Non-Smoking Generation-United States, Inc., and the American Lung Association of Ramsey County.

Why a coalition? The purpose of the coalition is to sponsor and promote our overall goal of a Smoke-Free Society by the year 2000. We believe we can achieve this goal more rapidly, more efficiently and more economically by engaging in, encouraging and coordinating those activities which are designed to (a) promote a smoke-free lifestyle among adults, youth and children; (b) minimize the exposure of nonsmokers to secondhand smoke; and (c) maximize assistance to smokers who are seeking to quit.

In commenting on the incorporation of the Minnesota Coalition for a Smoke-Free Society 2000, C. Everett Koop, M.D., Surgeon General of the United States, states that, "To achieve the goal of a Smoke-Free Society by the year 2000, it is vital that organizations such as yours be formed and broadly supported throughout the caring community."

D Day need not be restricted to one day in November. If you are now a smoker and can quit for one day, you can also quit for two days, and for three days, and for four days and each day you haven't smoked will help you continue your new health habit of not smoking.

One final comment: In the latter part of September 1984 all hospitals, nursing homes, and medical clinics in Minnesota received a letter from the Minnesota Medical Association asking them to lead the way in achieving a Smoke-Free Society by eliminating this costly health hazard within their own health facility. The initial response has been good. One of our first, if not the first, medical clinics to become totally smoke-free occurred within the Olmsted Medical Group on November 1, 1984. The major stimulation for designating their entire facility as Smoke-Free came from their employee staff. The Committee on Public Health extends its thanks and congratulations to the Olmsted Medical Group and to the many other clinics which became Smoke-Free on January 1, 1985. Let's hope that by January 1, 1988, all Minnesota clinics will be designated as Smoke-Free Areas.

Arvid J. Houglum, M.D., Chairman
Committee on Public Health
Minnesota Medical Association

Cover Photograph

"Crocus"

Dr. Frances Elizabeth Schaar, retired Minneapolis pediatrician but a very active person, took the lovely March cover positioning the crocus so that the sunlight would be behind the flowers. She used a Nikon F. camera with a macro 55 lens.

Presently Dr. Schaar is a part time instructor in the Nurses Continuing Education Program at Normandale Community College in Bloomington, in addition to being actively involved in the Women's Color Photo Club, Minneapolis Color Photo Club, Minnesota Nature Camera Club, and the Woman's Club of Minneapolis.

The Editors recognize her excellence in photography in that her slides have appeared on the covers of MINNESOTA MEDICINE in 1966, 1973, 1977, 1980 and 1983.

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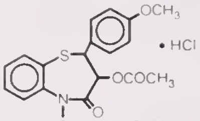

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CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been shown effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5% asthenia (1.2%), AV block (1.1%). In addition, the fc were reported infrequently (less than 1%) with the orc tion corresponding to the relative frequency of occu

Cardiovascular:	Flushing, arrhythmia, hypoten dia, palpitations, congestive syncope.
Nervous System:	Paresthesia, nervousness, tremor, insomnia, hallucinations
Gastrointestinal:	Constipation, dyspepsia, diar mild elevations of alkaline phos SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, p
Other:	Polyuria, nocturia.

The following additional experiences have been n

A patient with Prinzmetal's angina experiencin vasospastic angina developed periods of transient asystole approximately five hours after receiving a dose of CARDIZEM.

The following postmarketing events have been quently in patients receiving CARDIZEM: erythema m kopenia; and extreme elevations of alkaline phosp SGPT, LDH, and CPK. However, a definitive cause and these events and CARDIZEM therapy is yet to be es

OVERDOSAGE OR EXAGGERATED RESP

Overdosage experience with oral diltiazem has Single oral doses of 300 mg of CARDIZEM have been by healthy volunteers. In the event of overdosage c response, appropriate supportive measures should b addition to gastric lavage. The following measures may

Bradycardia	Administer atropine (0.60 to 1. is no response to vagal blocka isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia abov degree AV block should be tre diac pacing.
Cardiac Failure	Administer inotropic agents (i dopamine, or dobutamine) and
Hypotension	Vasopressors (eg, dopamine c bitartrate).

Actual treatment and dosage should depend on the clinical situation and the judgment and experience physician.

The oral/LD_{50}'s in mice and rats range from 415 and from 560 to 810 mg/kg, respectively. The intrave these species were 60 and 38 mg/kg, respectively. T dogs is considered to be in excess of 50 mg/kg, whil seen in monkeys at 360 mg/kg. The toxic dose in mar but blood levels in excess of 800 ng/ml have not be with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosc nary Artery Disease or Angina Pectoris at Rest nary Artery Spasm. Dosage must be adjusted to needs. Starting with 30 mg four times daily, before bedtime, dosage should be increased gradually (gi doses three or four times daily) at one- to two-day optimum response is obtained. Although individual respond to any dosage level, the average optimum appears to be 180 to 240 mg/day. There are no available ing dosage requirements in patients with impaired re function. If the drug must be used in such patients, titra carried out with particular caution.

Concomitant Use With Other Antianginal Age

1. **Sublingual NTG** may be taken as required t anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy** — CARDIZEM coadministered with short- and long-acting nitra have been no controlled studies to evaluate t effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTI

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles 0088-1771-47) and in Unit Dose Identification Paks 0088-1771-49). Each green tablet is engraved with M side and 1771 engraved on the other. CARDIZEM tablets are supplied in bottles of 100 (NDC 0088-1772- Dose Identification Paks of 100 (NDC 0088-1772-49 tablet is engraved with MARION on one side and 177

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Hemorrhagic Complications

MICHAEL B. BELZER, M.D.*

Hemostatic abnormalities are common in leukemia. Acquired disorders of primary hemostasis, the plasma coagulation system as well as vascular injury due to leukostasis have been described. Drug therapy may contribute to the hemorrhagic diathesis.

HEMORRHAGIC COMPLICATIONS are the second leading cause of morbidity and mortality in patients with acute and chronic leukemias. Disorders of platelet number and function, abnormalities of the blood vessel wall due to leukemic leukostasis, as well as acquired hemostatic abnormalities intrinsic to the disease or complications of therapy all add to the hemorrhagic diathesis.

Significant hemorrhagic complications are apparently unusual in stable chronic lymphocytic leukemia and chronic myelogenous leukemia. Hemorrhage as a cause of mortality represents only a small percentage of fatal events in several series of patients with chronic phase leukemia.[1,2] If severe hemorrhagic complications do occur in these settings, it is usually due to thrombocytopenia secondary to cytotoxic chemotherapy or as an acquired coagulopathy associated with overwhelming infection.

Major bleeding episodes in the acute leukemias are considerably more common than in the chronic leukemias and represent a major cause of morbidity and mortality. Considerable progress has been made in the treatment, management, and overall survival in patients with acute leukemia. New chemotherapeutic agents, combination therapy, and aggressive support with early use of antibiotics and blood products have all contributed to the improved outlook for these patients. Prophylactic platelet transfusions have altered the pattern of fatal events in the acute leukemias during the previous decades. In a recent series of 315 patients with acute leukemia, deaths contributed to by hemorrhagic episodes accounted for approximately 25% of all fatal events.[3] Hemorrhage as the only cause of death occurred in about 10% of patients. Fatal bleeding events were generalized in one-third of patients, and intracerebral in approximately one-third. The incidence of gastrointestinal and pulmonary hemorrhage were also notable.

Thrombocytopenia

Thrombocytopenia is the major identifiable abnormality during the course of acute and chronic leukemia. Multiple etiologies are potential explanations for the thrombocytopenic leukemic patient. Inadequate marrow platelet production may be due to diffuse marrow replacement with the leukemic cells or secondary to cytotoxic chemotherapy. Ineffective megakaryopoiesis due to leukemic involvement of the megakaryocyte can contribute to the thrombocytopenia. In addition to inadequate marrow production, peripheral destruction, splenic pooling or utilization of platelets may occur. Immune thrombocytopenia due to autoantibody production may be rarely seen in the lymphoid leukemias. Immunologic platelet destruction in association with bacteremia, however, is not uncommon. Splenic pooling of platelets secondary to hypersplenism may occur in leukemias associated with splenomegaly, CLL and hairy cell leukemia, but is distinctly uncommon in chronic phase CML even with massive splenomegaly. Finally, thrombocytopenia is an almost uniform accompaniment of disseminated intravascular coagulation.

The evaluation of thrombocytopenia in a leukemic patient must include a bone marrow aspirate and biopsy to determine whether or not a production abnormality exists. A destructive process or splenic pooling would be suggested if the marrow megakaryocytes were normal in number and morphology. Screening coagulation tests to evaluate for disseminated intravascular coagulation and appropriate cultures to rule out infection should be obtained if clinically indicated.

Treatment of the hemorrhagic episode secondary to thrombocytopenia is dependent on the etiology. Prophylactic platelet transfusions to keep the platelet count above 20,000 X 10^9/liter should minimize the hemorrhagic morbidity and mortality while awaiting the recovery of adequate marrow megakaryopoiesis.

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Coordinators: Leukemia Society Medical Advisory Committee, Toni N. Mariani, Ph.D., Chairman.

Immune thrombocytopenia secondary to autoantibody production usually requires treatment with corticosteroids or splenectomy. If thrombocytopenia associated with bacteremia is suspected, combination broad spectrum antibiotics should be instituted immediately following the obtaining of blood cultures and other appropriate microbiologic studies. If disseminated intravascular coagulation is suspected, treatment should be directed at the underlying cause. Platelet transfusions, fresh frozen plasma, cryoprecipitate, and/or heparin may be indicated.

Platelet Dysfunction

Multiple abnormalities of platelet function have been demonstrated in patients with chronic and acute leukemias.[4] Non-lymphocytic leukemias are thought to be clonal abnormalities of the myeloid stem cell and by definition would involve the megakaryocyte. It is not surprising that morphologic and functional abnormalities of platelets occur in these leukemias just as they are seen in the erythroid and granulocytic series.

Abnormalities of bleeding time, in vitro aggregation to a variety of agents, the release reaction, and platelet factor 3 generation have been demonstrated. Metabolic and ultrastructural studies have shown a multiplicity of abnormalities involving platelet granule composition and morphology, as well as microtubular, canalicular system, and membrane glycoprotein composition.

The evaluation of suspected qualitative platelet dysfunction in patients with leukemia is best initiated with a bleeding time. Platelet aggregation studies, metabolic evaluation, and electron microscopy are usually not undertaken except in research settings. If the bleeding pattern suggests a primary hemostatic abnormality and the platelet count is normal, a functional defect of platelets should be suspected. Treatment should consist of therapy directed at the primary disease and attempts made to rule out secondary causes of platelet dysfuncton. Platelet transfusions should be administered if indicated clinically. Avoid all medications that could add to the qualitative platelet defect.

Leukemic Leukostasis

The leukemic leukostasis syndrome contributes to the hemorrhagic diathesis mainly by the associated increase in central nervous system (CNS) hemorrhage.[5] Because of the significant morbidity and mortality of CNS bleeds, most authorities consider this syndrome as a true hematologic emergency. The major target organs affected by the leukostasis are the pulmonary system with or without associated chest x-ray abnormalities, and the CNS. Neurologic manifestations range from non-specific changes in mental status to impressive focal neurologic abnormalities. The pathophysiology is that of small vessel vascular leukocyte thrombi and needs to be clinically and therapeutically differentiated from CNS infiltration with leukemic cells. The lumbar puncture is characteristically void of leukemic cells in the leukostasis syndrome while positive in the leukemic meningitis.

The fundamental pathologic event leading to hemorrhage is the infiltration of the arteriolar wall with leukemic cells with resultant lost of vascular integrity. The resulting hemorrhage is usually intracerebral and often catastrophic. The hemorrhagic complications of leukostasis is correlated with the elevation of the white blood count and immaturity of the leukemic cells. Cell membrane charge and deformability are thought to be critical factors in this complication. Leukostasis is rare in chronic lymphocytic leukemia and distinctly unusual in stable chronic myelogenous leukemia. It is seen almost exclusively in the acute leukemias or blast crises of CML when the blast count is greater than 75-100,000 blasts per 10^9/liter.[5] Most authorities recommend emergency leukopheresis for patients with acute leukemia and high peripheral blast counts. If leukopheresis is not available, immediate aggressive cytoreductive chemotherapy is indicated.

Disseminated Intravascular Coagulation

Disseminated Intravascular Coagulation (DIC) is an acquired coagulopathy that involves multiple arms of the hemostatic system. The fundamental pathologic process is an abnormal "triggering" event that activates the plasma coagulation system with the resultant formation of excess thrombin. The fibrinolytic system is then activated by the intravascular coagulation and may add to the bleeding diathesis. Platelet consumption is uniformly seen in DIC.

DIC can be under compensated with predominantly hemorrhagic complications, compensated with no obvious clinical sequela, or over compensated with a thrombotic tendency. Clinical bleeding as a manifestation of DIC is multifactorial. Depletion of plasma coagulation factors, thrombocytopenia, and the anticoagulant effect of the circulating fibrinogen-fibrin split products contribute to the hemorrhagic process.

DIC is considerably more common in the acute leukemias than in the chronic leukemias. Although DIC can occur in any type of acute leukemia, acute promyelocytic leukemia (FAB M3) is the most common leukemia associated with DIC.[6] The vast majority of patients with acute promyelocytic leukemia have evidence of DIC during their clinical course either at presentation or following effective cytotoxic chemotherapy. The majority of patients with acute promyelocytic leukemia die from hemorrhagic causes. The activation of the clotting system in acute promyelocytic leukemia is thought to be secondary to the procoagulant activities of the numerous granules in the leukemic promyelocyte. The bleeding diathesis is often exacerabated by rapid leukemic cell lysis following chemotherapy. DIC can also be seen in leukemic patients secondary to infections.

Evaluation of DIC should include screening coagulation tests including a PT, PTT, TT platelet count, and fibrinogen levels. Patients with evidence of DIC should have an assessment of fibrin-fibrinogen degregation products and consideration given to assays of factor V and VIII if the diagnosis is in doubt. Vitamin K deficiency needs to be ruled out and prophylactic vitamin K should be given to all acute leukemia patients undergoing intensive chemotherapy. Severe liver disease can mimick DIC in all aspects. Dilution of clotting factors secondary to massive transfusion with whole blood or packed red blood cells may lead to a picture similar to DIC and must be considered in the differential diagnosis of a leukemic patient with a coagulopathy suggesting DIC.

Except in the case of acute promyelocytic leukemia, the use of heparin in the treatment of DIC associated with acute leukemia is controversial. Replacement with blood products consisting of platelet concentrates, fresh frozen plasma, and cryoprecipitate as a source of fibrinogen and factor VIII may be useful.

Drug Therapy

Chemotherapeutic agents may contribute to the bleeding diathesis of a patient with leukemia through initiation of DIC or as a direct result of the drug itself on plasma coagulation system proteins or platelets.[7] Thrombocytopenia secondary to cytotoxic chemotherapy has already been discussed. L-asparaginase is frequently associated with coagulation abnormalties including clinical hemorrhage and/or thrombosis. Hypofibrinogenemia, abnormalities of factor XI, IX, and antithrombin III have all been reported in association with L-asparaginase therapy.

An increase in fibrinolytic activity has been reported with the anthracycline antibiotics Adriamycin and Daunorubicin. Vincristine may cause platelet dysfunction. Agents including Methotrexate and the Thioguanines may cause hepatic dysfunction and a coagulopathy secondary to the attendant liver disease may ensue. Aspirin and nonsteroidal anti-inflammatory agents should be avoided in the thrombocytopenic leukemic patient because of their predictable affects on platelet function. High dose antibiotics of the penicillin family can cause in vitro abnormalities of platelet function. In a bleeding patient with leukemia, the potential contribution of drugs to the hemorrhagic disorder needs to be addressed by the physician.

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Minnesota Medical Association

Health Care for the Elderly — A Minnesota Physicians' Perspective

MMA Ad Hoc Committee on Health Care for the Elderly*

JAMES D. LEHMANN, M.D.,
Chairperson

I. Overview

A. Purpose of the Paper

In May, 1984, the Minnesota Medical Association House of Delegates commissioned a study on health care for the elderly in our state with the goal of enabling the Association to participate in and guide changes in this dynamic area of health care. In commissioning this study effort, the House of Delegates took note of: advances in medical science and technology which have resulted in greater longevity; the rapid increase in the number of elderly, specifically in the oldest age group; the efforts of public health care payors to control expenditures for elderly persons with little regard for quality of care for the aging patient; and the need for physicians to examine the impact of these and other trends on the care of aging patients and their own medical practice. The House directed that the study specifically address the following areas:

- The role of physicians and other health care providers in caring for elderly persons.
- The role of health care plans in the delivery of care to elderly persons.
- Potential ethical issues in the delivery of care to the elderly.
- The role of the family in the care of the elderly.

To carry out the study, the MMA Board of Trustees appointed a body of 12 practicing physicians with interest and expertise in the area of aging. The Committee met during the last quarter of 1984 to develop their report which was formally adopted by the MMA Board of Trustees on February 9, 1985.

The paper is organized in three sections: overview, exploration of issues and problems related to health care for elderly persons, and recommendations. It is the hope of the Minnesota Medical Association that this paper will be a useful resource for physicians who care for elderly persons and for policymakers who shape the payment system for health care services for elderly persons.

B. Demographic Shift Toward An Elderly Population

Physicians perceive a person to be elderly on the basis of their physiological rather than chronological age. Chronological age alone is not a factor in clinical decision-making. The group of people commonly referred to as elderly is extremely heterogeneous with regard to their health, social and other needs. The functional status of an elderly person is based on the person's individual capacity (taking into account the aging process and the presence of chronic and acute diseases) and their environment. As the longevity of the population increases, the use of a static age as an indicator of who is elderly has become a less useful construct. Since 1935 when eligibility for Social Security Retirement Benefits were set, the life expectancy of a 65-year-old has increased from 12.5 years to 16.4 years.[1]

Old people are getting older and are representing an increasing segment of the population. The growth in the elderly population is attributable to a number of factors including declining death rates from heart disease, cerebrovascular disease, influenza and other causes of death.[2] Nationally, between 1960 and 1980 the population aged 65 and over has grown more than twice as fast as the younger population, increasing 55%. The proportion of elderly persons increased during that period from 9.1% to 11.1%. Demographers estimate that the population over 65 will increase to 12.2% by 1990 and to 18.3% by the year

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2030 as a result of the maturing of the Baby Boom Generation. The proportional growth of the aging population will be largely offset by the decline in the segment of the population under the age of 18.[3]

These trends are further exaggerated in Minnesota, a state with longevity of its population second only to Hawaii. The population aged 85 and over is growing very rapidly — increasing 81% between 1970 and 1980. By the year 2010, an increase of 250% over 1970 levels is expected.[4] Fifty-eight percent of Minnesota's elderly population are female, and demographers expect this proportion to increase in the future.

C. The Health Needs of Elderly Persons

As longevity increases, chronic diseases have emerged as the major causes of death and disability. With more persons suffering from conditions which are "cared for" rather than cured, and which cause afflictions for decades, demands on the health care system increase correspondingly. Among the most incapacitating chronic conditions are Alzheimer's disease and other related dementias which are more common with advancing age and are a major cause of institutionalization. It has been estimated that the incidence of dementing illness doubles every five years after age 65, with approximately one percent exhibiting dementing illness at 65 and 40-50% of persons in their 90's so affected.[5] Other chronic problems which increase in frequency and severity as the elderly continue to age include arthritis, heart disease and its complications, and osteoporosis. Mobility problems, incontinence, perceptual deficits, and depression also occur more frequently. Increasing dependence and limitation of activity for the very old is the result of multiple illnesses or frailty. The clinical ramifications of more than one chronic illness seem to have a multiplied rather than additive effect.

Attendant to the aging process is a loss of functional reserve capacity. That is, the elderly person is not as adaptable to different situations such as acute and chronic illnesses and changes in living environments as are younger people. The elderly person is more susceptible to acute illnesses and to significant social and psychological effects associated with those illnesses. The interaction of acute and chronic illnesses and the social and psychological components of physical impairment create a real challenge for the clinician. The physician must determine whether a given problem is a symptom of the aging process itself or a manifestation of a treatable chronic or acute illness.

A further clinical phenomenon unique to the aging process is the nonspecific presentation of illness. The elderly person may fall, lose weight and become confused as a result of an illness that is not readily apparent. When elderly persons lose their ability to live independently, it is critical that they be evaluated medically before changes in living situations are effected.

Iatrogenic disease, or problems caused by the health care system itself, is another concern of those who care for elderly persons. Confusion and disorientation associated with a changing environment, complications resulting from immobilization, falls from hospital beds, dependency, drug reactions, poly-pharmacy and some infections are commonly observed.

These increasing health problems lead to restrictions in activities of daily living for approximately 45% of the non-institutionalized aged population, both in Minnesota and nationally.[6] Approximately 20-30% of Minnesota's non-institutionalized elderly population report problems in such daily activities as going up and down stairs and doing household chores.[7]

D. Utilization of Health Care Resources

As a result of higher prevalence of multi-organ disease, increased incidence of chronic illness, severe functional disability, and multifaceted problems, elderly persons use more health services and expend a disproportionate share of the health care dollar. The elderly (approximately 11% of the population) accounted for 32.6% of the $255 billion total spent for personal health care in 1981. Per capita expenditures for persons aged 65 and over were $3,140 — over three-and-one-half times the $828 per capita for persons under age 64.[8] The elderly are the largest users of hospital and physician services. They account for almost 40% of the total hospital inpatient days and 30% of all clinic visits. Elderly persons are admitted to a hospital three times more frequently and have an average length of stay 76% greater than younger adults.[9]

One cost-containment strategy that has the potential to improve the well-being of elderly persons is to focus on prevention. In a recent paper, Anne R. Somers recommends that policy makers reconsider the prohibition against Medicare payment for preventive services such as routine physical checkups, and eye, hearing and dental examinations.[10] Regardless of whether such a policy shift is made, physicians should continue to emphasize the benefits of healthy lifestyles and good nutrition and to promote greater knowledge and responsibility for personal health.

While the actual expenditures per Medicare beneficiary are escalating nationally, McClure and Shaller recently found that physicians in hospitals in the Twin Cities metropolitan area and in Rochester, Minnesota have been doing much to contain the rise. In the Twin Cities, Medicare expenditures per elderly person declined from 21% above the national average in 1974 to 3% below the national average in 1982. In Rochester, Minnesota, expenditures fell during that same period from 6% above to 21% below the national average.[11]

Nursing home costs account for 8.5% of all health care expenditures nationally. Spending in this area more than doubled between 1976 and 1982, and the trend is expected to accelerate as the population ages.[12] Approximately 5% of persons aged 65 or older occupy 95% of the nursing home beds in the nation. Nearly one-fifth of the elderly will spend some time in a nursing home before their death. Approximately 22% of persons aged 85 and over currently reside in nursing homes.[13]

The proportion of elderly residents in Minnesota who are institutionalized in nursing homes is 8.4% (compared to 5% nationally). In 1980, Minnesota ranked seventh nationally with respect to the number of nursing home beds per 1,000 persons over 65 (i.e. 95 nursing home beds versus 62 nursing home beds per 1,000 elderly persons nationally). While the number of Minnesotans residing in nursing homes has grown sharply over the past decade (to 44,553 in 1980), the bulk of this increase is attributable to the increase in the population aged 85 and over. Demographers project that if present trends continue, the Minnesota nursing home population can be expected to increase to 54,400 in 1990 and 66,000 by the year 2000.[14]

The cost of providing care for elderly persons during the last year of life is substantial, with resource use especially intense in the patient's last quarter of life. In a recently published study, the median expenditure for elderly persons in their last year of life was $3,581 as compared to the median for a random sample of surviving elderly persons of $92. Resource use is skewed toward institutional services. Expenditures for all Medicare beneficiaries (includes aged, disabled and end-stage renal disease patients) who were hospitalized in their last year of life were $8,000 per person, compared to expenditures for those not hospitalized of $325.[15] Bloom and Kissick, in a study of the cost of terminal illness in the last two weeks of life, found costs for hospitalized persons were more than ten times greater than for those cared for at home. Diagnostic procedures accounted for 19% of all hospital charges. Diagnostic and therapeutic services were given to nearly all hospital inpatients until the day of death.[16]

Maximizing function and independence is the primary focus of medical treatment for the very elderly. This requires attention to health promotion measures and a long-range therapeutic management program which addresses not only specific disease processes but also their impact on the individual's lifestyle and ability to cope with long term disability. Therapeutic measures should emphasize restoring function in chronic diseases of mobility and instability.

E. The Continuum of Care for Elderly Persons

Numerous study groups and government agencies have attempted to define long-term care. The Health Care Financing Administration defines long-term care as:

> "A range of medical and supportive services for individuals who have lost some capacity for self-care due to a chronic illness or condition, and who are expected to need care for an extended period."

Several states have developed their own definitions. Minnesota's broad definition says in part that "long-term care is part of a wide variety of services and assistance encompassing health, social, housing and income services provided to the chronically ill and physically disabled over an extended period of time for chronic conditions not amenable to brief periods of service."[17]

Long-term care may be provided formally or informally — that is by paid professionals, by paid paraprofessionals and by friends and relatives.[18] Most professionals when they refer to the panoply of long-term care services use the phrase "continuum of care", implying that health and social services for the chronically impaired elderly can be logically ordered and integrated. While many models have been proposed, arraying services from the least restrictive to the most restrictive by setting or delivery site, by need, or by service type, no model is universally recognized. However, the following are examples of the types of services and settings that are necessary for a comprehensive care system:

- Transportation Services
- Monitoring Services
  - (e.g., telephone reassurance services)
- Homemaker Services
- Home Health Care
- Nutrition Programs

Legal/Protective Services
Senior Citizen Recreation Centers
Office-based Medical Care
Community Mental Health Centers
Adult Day Care
Respite Care
Special Housing
 (e.g., senior congregate housing)
Nursing Home Care
—Intermediate Care
—Skilled Nursing Care
Hospice Care
Psychiatric Hospitals
Acute Care Hospitals

Long-term care services for the frail elderly are characterized by fragmentation and discontinuity. Fragmentation in some instances means that the continuum is not complete — that is, a particular service is simply not in place. Or, the service can exist but be inaccessible by virtue of a waiting list, or because of restrictions based on income, health status, place of residence, other eligibility criteria, or lack of skill in negotiating the system. The fragmentation also refers to discontinuity among services and to a "lack of fit" between the person's needs and the funding mechanisms available. The eligibility criteria and restrictions of each funding source make it difficult to provide the diversity of services available to a given person in need.[19] To ensure that an individual's needs neither fall through the cracks nor are "over-served", an evaluation mechanism to determine changing needs over time and a method to share that information across services and systems is needed.

F. Payment Systems

While there are many different funding sources for these services, the most significant are personal out-of-pocket expenditures and the federal and state programs of Medicare and Medicaid. With the dramatic shift toward an older population both, federal and state governments are seeking ways to more accurately ascertain what their costs will be, and to contain those costs. Congress is investigating voucher and prepaid approaches to control Medicare costs. For the last several years, Minnesota has been the site of one of several federal demonstration projects to enroll senior citizens in prepaid health plans, or Health Maintenance Organizations. Having judged the demonstrations a success, Congress has enacted a new law to move this effort from the demonstration to implementation phase nationwide. In Minnesota, it is estimated that within the next two years up to 50% of the elderly population living in the Twin Cities area will be enrolled in prepaid health plans. One concern under such a system is to ensure that HMOs make their services available to a wide range of elderly persons in need of health care.

Recently the Medicare program has changed the way in which physicians will be paid by capping payments for all providers and freezing the fees of "non-participating providers". The identification of some physicians as non-participating providers has caused considerable concern in the elderly population due to the erroneous assumption that a physician who has not agreed to accept the Medicare rate as payment in full is no longer willing to see Medicare patients. Financial agreements between physicians and HMOs are not affected by the Deficit Reduction Act. For patients not enrolled in HMOs, the Metro Senior Federation (a Twin Cities group) has agreements with physicians who will accept Medicare assignment as payment in full.

Since Medicare began paying for hospital services on a prospective payment basis through Diagnosis Related Groups (DRGs) in the fall of 1983, the feasibility of extending that payment method to physician services for hospital inpatients has been under consideration. One possibility is that a single payment would be made for both hospital and physician services. In response to such an approach, joint ventures might develop. HMOs are not expected to be affected by this approach. Another method of paying for physician services that is receiving much consideration is a national Relative Value Scale.

The Medicaid program in Minnesota is also undergoing considerable transition as legislators and other policy-makers look toward prepayment as a cost-saving alternative to fee-for-service care. In July of 1982, the state received a federal grant to develop a demonstration project; in the 1983 legislative session the necessary legislation was passed; and three counties (Itasca, Hennepin, and Dakota) are now making plans to implement this demonstration program in July, 1985. Under the terms of the demonstration, all services will be provided to the Medicaid population through various "umbrella organizations" with a capitation payment. While umbrella organizations are intended to be broader than HMOs, entities that are already functioning and providing services on a capitated basis may well have a competitive edge in the bidding process by virtue of experience.

A report to the legislature issued by the Minnesota Department of Health in November, 1984 also advocates a prepaid system to the extent feasible for the Medicaid population. The report urges the state to select only certain providers and to end its policy of open access for Medicaid patients to all providers.

In the private sector, prepaid health care plans for senior citizens are proliferating, and enrollment rates are high. The single fixed monthly payment provides the same advantage to the elderly person as it does to governmental entities — that is, the costs for the service are fixed and known. Prepaid plans also have the appeal of eliminating paperwork and the filing of claims.

In addition, a new type of plan known as the Social HMO or S/HMO will be offered in the Twin Cities area in the near future by two separate consortia of organizations. The S/HMO combines funding from Medicaid, Medicare and some federal title monies to provide a continuum of services for elderly persons, including medical services, nursing home services, respite care, day care, chore services, etc., on a capitated basis. S/HMOs also coordinate services beyond those which are covered by the plan.

It is clear that an increasing proportion of the elderly population, especially in the Twin Cities metropolitan area, will receive services through some sort of organized health plan with access restricted to a given set of affiliated providers. Physicians should become familiar with these health care plans to enable them to advise their patients. Physicians should also be advocates in the plans with which they are affiliated for the special needs of elderly persons.

Two innovative financing concepts receiving increasing attention are home equity conversion and Health Individual Retirement Accounts (HIRAs). Home equity conversion programs enable elderly homeowners to remain in their homes and to increase their disposable income by drawing on the equity in their property. There are at least four types of programs for converting home equity.[20] Elderly persons considering this option should determine that their particular agreement guarantees lifetime occupancy for both spouses. The Health Individual Retirement Account is a concept being proposed by many policy makers in response to the fiscal crisis of the Medicare program. It would provide tax incentives to promote private savings for future health expenditures.

II. Exploration of Issues and Problems Related to Health Care for the Elderly

A. Influence of Financing Mechanisms on the Type of Care Provided

The type of services provided to elderly persons, and the way in which those services are provided, is influenced significantly by the way in which they are financed. The various funding mechanisms often have contradictory requirements which make it difficult for providers to assemble an appropriate array of services for a given individual. The mechanics of filing claims are so cumbersome that many physicians' offices have hired staff to handle this for their patients, adding significantly to office overhead costs.

Within existing public financing mechanisms there has traditionally been a significant bias toward the use of institutions for elderly persons. This institutional bias may be counterproductive, not only because institutional care is costly, but also because institutional care may not be in the best interests of the elderly person. Viewing an institutional setting as the solution to both housing and medical needs for the elderly person may foreclose options for dealing more creatively with these needs in a less restrictive setting. Insufficient or inconsistent sources of funding for non-institutional services has resulted in a lack of support services needed to allow elderly persons to function outside an institutional environment.

The financing mechanism also influences the site of care. The low Medicare reimbursement rate for physician home visits and the limit on Medicare reimbursable nursing home visits are disincentives to the provision of care outside the office or hospital settings.

Present financing mechanisms will not meet our future needs. As a result of the demographic shift toward an increasingly elderly population, it will cost more to continue delivering the same level of services. Projections regarding when the Medicare funding pool will be bankrupt range from 1988 to an "optimistic" outlook of 1996. It is clear that in addition to a substantial restructuring of publicly funded programs that private sources will increasingly be required to assume responsibility for caring for elderly persons as well. More creative private sector financing mechanisms, such as private long-term care insurance, health independent retirement accounts (HIRA) and home equity conversion should be considered.

B. Role of the Family

Families are the predominate service and health care providers for the impaired elderly persons living in the community. Studies have demonstrated that the availability of the family support system is the primary factor in reducing the probability of institutionalization for the elderly person who is chronically ill. Exhaustion of family resources more often precipitates institutional placement than an actual change in the aged person's health status.[21]

The extent to which a family can assist an elderly person to remain outside an institutional setting is dependent on their own ability to assist in the caregiving role, the accessibility of other support services, and their financial resources. With the societal trends toward increased mobility, decreased family size, two-career families, and increased longevity (leading to the possibility that the child of the elderly parent may also be elderly), the ability of families to maintain elderly relatives without support is severely limited. Horowitz and Shindelman, in research regarding social and economic incentives for family caregivers, found that service and social supports, specifically medical and homemaker services, were perceived by family caregivers to be more crucial than direct or indirect financial incentives.[22]

Unlike other anticipated major expenditures and family needs which can generally be planned for or insured against, there are few mechanisms available to prepare families to financially bear the costs of the housing, medical, and social needs of their elderly relatives. Although some companies are developing and marketing long term care insurance, it is not widely available.When family resources are exhausted, Medicaid may be the only alternative.

C. Roles of Physicians and Various Health Care Providers

Just as many different kinds of services are needed by elderly persons, many kinds of health and social service professionals are involved in providing the services required.The lack of a generally accepted mechanism for sharing information regarding the functioning of elderly persons among providers across systems and services provides a challenge to those involved in the care.

If we understand function to combine the components of individual capacity and the environment, the physician's primary role is to maximize individual capacity, while the primary role of other professionals is to intervene in environmental aspects. The physician, by virtue of medical expertise, is in the best position to develop a medical treatment care plan in consultation with the patient and family members. The physician is responsible for:

- Providing quality health care economically;
- Recommending health promotion measures that will foster a productive and active lifestyle;
- Making an accurate diagnosis based on special knowledge of the aging process and disease process;
- Providing treatment and ongoing medical evaluation (often for multiple problems);
- Ensuring continuity of care and coordination among caregivers;
- Facilitating good communications with the patient, the family, and other caregivers to clarify issues relating to treatment goals;
- Discussing with the patient and family information regarding the nature and course of the disease and potential treatments;
- Supporting the patient in informed decision-making regarding treatment; and
- Using life support technology in a medically appropriate manner.

As an elderly person's special problems become more complex, the physician's non-procedural services (such as counseling with the patient, family and other caregivers and ensuring coordination and continuity of care) become increasingly important. Caring for elderly persons also takes more time. While our current payment system does not adequately account for this, there are efforts underway nationally to address the issue of payment for both procedural and non-procedural services through a Relative Value Scale.

Medical students have the opportunity to learn about issues related to the care of elderly persons at each of the medical schools in the state through such experiences as elective rotations and clinical rounds with geriatric patient populations and through course offerings. The University of Minnesota has recently inaugurated a new required course in the area of long-term care. Practicing physicians have opportunity to improve their knowledge-base and skills relating to elderly patients through a variety of continuing medical education courses. Yet, because of the increasing number of elderly persons and their unique medical needs, greater educational emphasis for physicians in training and for practicing physicians seems appropriate.

Other professionals such as social workers and public health nurses are often in the best position to facilitate the non-medical services required by elderly persons. Cross-disciplinary educational opportunities for persons training in the health, social service, and other helping professions, may foster mutual respect and facilitate the smooth functioning of multi-disciplinary teams.

At present, many professionals providing services to elderly persons are not familiar with the broad range of services that could potentially be made available, or they may not know how to access or finance those services. The lack of bridges between the professionals, between services, and between settings is frustrating at best for professionals, family caregivers and elderly persons.

All professionals providing services to elderly persons should be alert to the wide-ranging differences in levels of need among elderly persons and to the tendency to foster dependence rather than independence. While some elderly persons may benefit from the coordinating services of a public health nurse assigned to them on a geographic basis, others may have such complex care needs that they would best be served by a well coordinated care team in close consultation with the patient's physician.

D. Ethical Concerns

In October of 1983, the federal government began phasing in the Prospective Payment System for Medicare based on Diagnosis Related Groups. Under the system, hospitals receive the same payment for all persons within a given diagnosis category, regardless of the amount and types of services provided. While this system is intended to reward efficiency, the DRG methodology may lead to adverse consequences such as:

- Delay of hospital admissions.
- Premature discharge of elderly persons.
- Separate admissions to deal with multiple problems.
- Early discharge to the community without adequate alternative support systems in place.
- Transfers to other facilities based more on economic considerations than on patient needs.
- Translocation traumas associated with multiple transfers to various care settings.
- Pressures on physicians to make patient care decisions based on economic considerations.

Another ethical concern relates to the increasing public reluctance to continue supporting rising costs of health care, and the continued improvement in medical technology with the ability to improve and prolong life. The conflict between these two trends brings the threat of rationing of health care into sharp focus and challenges the physician's role as patient advocate. Elderly persons are a likely target for rationing policies.

Counterbalancing the concern regarding the rationing of health care service for elderly persons is the over-zealous application of medical technology. We may, in fact, be over-caring for elderly persons by continuing diagnostic and therapeutic measures without sufficient consultation with the patient and family members beyond the point where any benefit to the patient can be reasonably expected. Quality medical care for elderly persons involves the recognition that not everyone can be cured, and an emphasis on the care instead of ''cure''. Sensitivity to quality of life and death issues are concepts that need to be taught in medical schools. Physicians should assist their patients and the general public in understanding the medical and ethical issues regarding the application of advanced life support technology and increasing the awareness of the patients' rights to choose and refuse treatment.

When physicians, patients, family members, and other care givers have agreed not to employ cardiopulmonary resuscitation, Do Not Resuscitate (DNR) orders can be given. However, the lack of a universally understood and agreed-to process for writing DNR orders for a patient can create conflicts between the physician, the nursing home and/or hospital staff, paramedics, other caregivers and interested persons.

III. Recommendations

Recommendations for changes should:

- Maximize independence and promote optimal level of function for elderly persons;
- Ensure the provision of necessary and reasonable care; and
- Restructure the care and payment systems to provide a full range of services to meet the unique and diverse needs of elderly persons.

A. Recommendations for Physicians

1. Patients' Rights

   Physicians and other health care providers should actively involve elderly patients in discussions regarding their own care including decisions to accept or refuse treatment, consistent with the Patients' Bill or Rights. If the elderly patient is mentally incompetent, physicians should recognize the responsibility of the family or other guardian to participate in the care decisions on behalf of the elderly patient.

   Examples: The patient may elect not to have chemotherapy or to have a gangrenous leg amputated. If a patient is mentally incompetent, the caring family, speaking in the patients' best interests, could refuse an operation.

2. Physicians' Responsibilities in Care for the Elderly

The physician is responsible for:

- Providing quality health care economically;
- Recommending health promotion measures that will foster a productive and active lifestyle;
- Making an accurate diagnosis based on special knowledge of the aging process and disease processes;
- Providing treatment and ongoing medical evaluation (often for multiple problems).
- Ensuring continuity of care and coordination among caregivers;
- Facilitating good communications with the patient, the family, and other caregivers to clarify issues relating to treatment goals;
- Discussing with the patient and family information regarding the nature and course of the disease and potential treatments;
- Supporting the patient in informed decision making regarding treatment; and
- Using life support technology in a medically appropriate manner.

3. Teaching Programs

In response to the large and increasing number of elderly persons in Minnesota, medical schools within the state should formalize undergraduate and post-graduate training programs in geriatric medicine. The curriculum should include such concepts as:

- Unique medical needs of the elderly, the effects of the aging process and pharmacological implications;
- Special skills for the evaluation, assessment and treatment of elderly persons;
- Preventive health measures for elderly persons;
- Knowledge of the long-term care system and how to utilize it;
- How to work collaboratively in a multidisciplinary team;
- The distinction between chronic and acute treatment goals;
- Ways to talk with the patient and family regarding such sensitive topics as treatment decisions and ultimately death-related issues; and
- Ethical and legal considerations of life support technology.

4. Continuing Medical Education

The MMA and other medical specialty societies should increase their sponsorship of continuing medical education courses for practicing physicians emphasizing the unique body of knowledge and skills required to care for elderly persons.

5. Ethical Issues Re: Death with Dignity

The MMA should take a leadership role in supporting the general public and the profession in gaining an understanding of the medical and ethical issues regarding the application of life support technology and in increasing the awareness of the patients' rights to accept and/or refuse treatment.

Discussion: Inappropriate application of advanced life support technology can prolong the patient's suffering or dying process to the detriment of the patient, the family, and all those involved in the caring process. Physicians and other health care providers and the general public are just beginning to discuss decisions regarding when it is or is not appropriate to apply advanced life support technology.

Example: Guidelines and a process for encouraging the implementation of supportive care plans in Minnesota health care facilities and a standardized process for implementing Do Not Resuscitate (DNR) orders could be developed.

6. Physicians' Responsibilities Re: Health Care Plans

Physicians should become familiar with the various health care plans available to elderly persons to enable them to advise their elderly patients. Physicians should be advocates in the plans with which they are affiliated for the special needs of elderly persons.

B. Recommendations for Restructuring the Care and Payment Systems:

1. Fewer Restrictions/More Flexibility

Social, housing, health and medical services should be provided in the least restrictive setting consistent with the unique needs of each elderly person. The payment system should be flexible and allow for use of non-institutionalized care alternatives.

Example: Some options for consideration include:

- Remove the fiscal incentive for counties to utilize institutional placements over the provision of community services;
- Separate the payments for housing services and medical services;
- Provide tax incentives and a favorable regulatory environment to encourage the development of quality non-institutional alternative services;
- Provide equivalent payment for physician services regardless of the site of care (e.g., office, hospital, home, nursing home).

2. Care Coordination

We support systems and models which provide care coordination for elderly persons, with active physician involvement. Care coordination services should be compensated. The collaborative efforts of all involved health care professionals — social workers, public health nurses, and physicians — are necessary. As patient medical needs increase in complexity, physician involvement should also increase.

3. Support for Family Caregivers

Family caregivers play a large role in providing care to elderly persons outside institutional settings. The community, county and state, through both public and private efforts, should preserve and enhance this informal caregiver network by providing support services.

Example: Services which provide relief to family members include: adult day care, home care, respite care, electronic personal emergency response systems, telephone reassurance services, and family patient care conferences.

4. Develop Private Financing Mechanisms

Government should facilitate the development of private financing mechanisms to assist elderly persons and their families to meet financial obligations for their care.

Example: Such proposals as private long term care insurance, home equity conversion plans, and health individual retirement accounts (HIRAs) seem particularly promising.

5. Regulations Which Promote Quality and Creativity

Regulations for programs which house elderly persons should emphasize quality of care but should not be so restrictive as to interfere with creative and cost-effective methods of delivering care.

Example: When Medicaid patients are housed in a given setting, the full range of institutional regulations is brought to bear on that facility — potentially making it cost-ineffective and administratively cumbersome to operate.

6. Use Excess Hospital Capacity

We support the creative, cost-effective use of excess hospital capacity to meet the service needs of elderly persons.

Example: Excess hospital capacity could be used to provide swing beds, medical evaluation services or respite care, or be converted to provide such services as adult day care, congregate dining, recreational activities, etc.

7. Interdisciplinary Research

We support the funding of interdisciplinary research in long-term care to provide an informed basis for decision-making nad resource allocation.

8. Study Effects of DRGs

The impact of the Medicare Diagnosis Related Group-based payment system on the health of elderly persons should be evaluated.

See references on page 223.

We suggest you duplicate this for your file.

MMA ANNUAL MEETING
"THE PHYSICIAN AS ARTIST"
May 8-10, 1985, Radisson St. Paul Hotel
Information Sheet

FEE: $10 per item
($5 for residents
and medical students)

ELIGIBLE
EXHIBITORS: All Physicians

EXHIBIT HOURS: 8:00 a.m.-5:00 p.m., Thursday, May 9
8:00 a.m.-5:00 p.m., Friday, May 10

APPLICATION
DEADLINE: APRIL 10, 1985

DELIVERY must be made in person between the hours of 8:00 a.m. and 3:00 p.m. on Wednesday, May 8, 1985, to The Senate Suite at the Radisson St. Paul Hotel (lower level).

PLEASE DO NOT SHIP DIRECTLY TO THE RADISSON ST. PAUL HOTEL OR TO THE MINNESOTA MEDICAL ASSOCIATION OFFICE. Neither the Hotel nor the MMA office has space for storage prior to the exhibit. Only items that can be personally delivered and picked up will be accepted.

SET-UP AND DISPLAY will be handled by the Art Show Chairman with the assistance of MMA staff. Framed pieces and heavy pieces to be suspended should be equipped with wire. Mounting tape will be used to mount lightweight photographs, drawings, etc. on the walls and display panels. Shelves, tables and pedestals will be used for three-dimensional objects.

EXHIBITS MUST BE PICKED UP between the hours of 5:00 p.m. and 6:00 p.m. on Friday, May 10. The MMA cannot ship exhibits back to their owners.

JUDGING, PRIZES: An expert judge will make awards on Thursday, May 9. Ribbons will be placed on the winning items.

ACCEPTABLE ENTRIES: All forms of art are encouraged. Entrants should choose artistic creations as opposed to craft products.

SECURITY: Guard service for the exhibit room will be hired between 8:00 a.m. and 5:00 p.m. on Wednesday, Thursday and Friday. When the room is not occupied by a guard, it will be locked.

LIABILITY: The Minnesota Medical Association, the Radisson St. Paul Hotel, Radisson Hotel Corporation, and Brede, Inc., are not responsible for injury to persons or damage to or loss of property. It is understood that neither the Hotel nor the legal entities which own, lease and/or operate the Hotel; the Minnesota Medical Association; nor Brede, Inc.; nor their members, officers, directors or employees shall be responsible or liable for injury to any person or persons or for loss of or damage to any property belonging to the exhibitor or any person or persons. The exhibitor assumes complete responsibility and liability for all loss, damage or destruction of the property of the exhibitor, his guests and all property of the Hotel used by the exhibitor or brought upon the Hotel premises in his behalf.

The exhibitor indemnifies and agrees to hold harmless the Minnesota Medical Association; the Radisson St. Paul; Brede, Inc.; and the legal entities which own, lease, and/or operate the Radisson St. Paul Hotel; and their members, officers, directors and employees against any and all liability whatsoever arising from any or all damage to property or personal injury or loss caused by the exhibitor or his agents, representatives, employees, or any other person.

AM#1, ART.INFO

ART SHOW APPLICATION FORM
Deadline for Submission: April 10, 1985
Fee: $10 per item ($5 for residents & medical students)

NAME ______________________________

ADDRESS ______________________________
(STREET)

____
(CITY, STATE, ZIP)

OFFICE PHONE ( ) ______________ HOME PHONE ( ) ______________

Only one entry may be made per person per category. (Multiple paintings, drawings or sculpture may be submitted if they are in different media.) Please request additional forms if necessary and complete one form for each entry.

CATEGORY:

___ Paintings (medium: ____________)

___ Drawings (medium: ____________)

___ Ceramics

___ Sculpture (medium: ____________)

___ Jewelry

___ B/W Photography

___ Color Photography

___ Other (specify: ______________ ______________)

BRIEF DESCRIPTION (subject, materials used): ______________________________

____

TITLE: ______________________________

DIMENSIONS/SIZE: ______________ ESTIMATED VALUE: ______________

(A photograph must be submitted with the application form.)

I agree to the terms indicated on the Information Sheet printed on the reverse of this form.

______________________________ ______________
SIGNATURE DATE

Please attach the entry fee (payable to Minnesota Medical Association) and photograph and return to:

Department of Continuing Medical Education & Meeting Services
Minnesota Medical Association
2221 University Avenue S.E., Suite 400
Minneapolis, MN 55414
612/378-1875

A list of all entries will be mailed to entrants the last week preceding the show.

AM#1, ART.APP

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

EBRUARY, 1985

8-March 29 **ation;** St. Francis Regional Medical Center, Education Department; hakopee, MN; CONTACT: Judy Hoff, Ed. Director, St. Francis Reional Medical Center, Shakopee, MN 55379; 612/445-2322.

Advanced Cardiac Life Support Certifi-

ARCH, 1985

3-15 **MAFP Spring Refresher-House of Delegates Meeting;** MN cademy of Family Physicians; Radisson South Hotel, Bloomington; ONTACT: Chari Konerza, MAFP, 2221 University Ave. SE, Suite 426, lpls., MN 55414; 612/623-9559.

16 **Aggressive Management of Type II Diabetes Mellitus;** American iabetes Association, MN Affiliate and Mount Sinai Hospital; L'hotel ofitel, Mpls.; CONTACT: Victor Corbett, M.D., Symposium Cohairman, American Diabetes Association, 3005 Ottawa Ave. So., Mpls., IN 55416; 612/920-6796.

22 **Emotional Trauma in Emergency Medicine;** St. Paul-Ramsey edical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. cIntyre, 612/221-3980.

7 **BME Workshop — "The Patient and the Practitioner: Personal orality and Public Policy";** MN Interreligious Committee for Bioedical Ethics: Minneapolis, MN; CONTACT: Trudy Rogness Jensen, hair, 4420 Philbrook Lane, Mpls.,MN 55424, 612/922-3537

28-30 **Cardiopulmonary Medicine Update;** St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

30 **Sixth Annual Update in Occupational Medicine;** St. Paul-Ramsey Medical Center, Midwest Center for Occupational Health & Safety and American Lung Association of Minnesota; Radisson Plaza, St. Paul; CONTACT: Ruth K. McIntyre, Director, Con. Ed., Occupational Health, St. Paul Ramsey Hospital; 612/221-3992.

APRIL, 1985

1-2 **Annual Ophthalmology Specialty Course, "Glaucoma: Mechanisms and Management";** Dept. of Ophthalmology and Office of CME, Univ. of MN Med. Sch.; Holiday Inn Downtown, Mpls., CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

11-12 **Third Annual OB/GYN Update;** St. Paul-Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

11-13 **Allergy and Clinical Immunology;** University of MN, Office of CME; Mayo Memorial Auditorium, Minneapolis; CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

12-13 **Colorectal Problems for Primary Care;** University of MN, Office of CME; Hyatt Regency, Mpls.; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

12-13 **Eating Disorders;** University of MN, Office of CME; Earle Brown Center, Univ. of MN, St. Paul; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

13 **Spring Scientific Meeting;** Minnesota Society of Anesthesiologists; Hilton Inn, Minneapolis; CONTACT: Secretary, MN Society of Anesthesiologists, 200 First St. SW, Rochester, MN 55905; 507/286-8701.

13 **MSCP Spring Seminar;** Minnesota Society of Clinical Pathologists; Hyatt Regency, Minneapolis; CONTACT: Pam Lindberg, MMA, 2221 University Ave. S.E. — 400, Mpls., MN 55414, 612/378-1875.

15-19 **Family Practice Review: Update 1985;** University of MN, Office of CME; Radisson, St. Paul; CONTACT: CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

18-19 **Pediatric Days;** Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

18-May 17 **Advanced Cardiac Life Support Certification;** St. Francis Regional Medical Center, Education Department; Shakopee, MN; CONTACT: Judy Hoff, Ed. Director, St. Francis Regional Medical Center, Shakopee, MN 55379; 612/445-2322.

19-20 **8th Annual Clinical Update in Practical Cardiology;** Abbott-Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, 800 E. 28th St., Mpls., MN 55407, 612/874-4300.

22-26 **Diagnostic & Therapeutic Concepts in Clinical Endocrinology, 1985;** American College of Physicians; Mayo Clinic; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

(April continued)

26 New Technology in Medicine; The Duluth Clinic, Ltd.; Fitger's Inn, Duluth, MN; CONTACT. J.G. Brueggemann, M.D., 400 East Third St., Duluth, MN 55805, 218/772-8364.

26-27 Frontiers in Medicine; St. Joseph's Hospital; St. Paul; CONTACT Judy Stroebel, Public Relations, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3062.

26-27 Ophthalmic Reviews — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

MAY, 1985

1-3 Pulmonary Function Testing Workshop; St. Paul-Ramsey Medical Center; St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

2-3 Health and Addiction; University of MN, Office of CME; Saint Paul Hotel; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

3 Antiviral Therapy; University of MN, Office of CME; Radisson University, Mpls; CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

3 ENT in Primary Care; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Pub. Relations, 69 West Exchange St., St. Paul, MN 55102, 612/291-3062.

6-10 Practice of Internal Medicine — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

8-10 MMA Annual Meeting; Radisson St. Paul; CONTACT: Eugenia C. Kassar, Director, CME & Meeting Services, MMA, 2221 University Ave. S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

18-21 Impact of Modern Perinatal Care on Society, 15th Annual Meeting; Great Plains Organization; Radisson South Hotel, Mpls.; CONTACT: Kim Bardis, Box 50, Mpls., MN 55455, 612/373-5718.

19-20 Heart Attack Prevention Workshop; University of MN, Office of CME; Marine on St. Croix, MN; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 612/373-8012.

21 Gynecologic Oncology; University of MN, Office of CME; Ra isson University, Mpls; CONTACT: Office of CME, Univ. of MN, B 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

22-24 Current Concepts in Radiation Therapy; University MN, Office of CME; Mayo Memorial Bldg., Minneapolis; CONTAC University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S Mpls., MN 55455 612/373-8012.

JUNE, 1985

5-7 Topics and Advances in Pediatrics, University of Minnesot CME; Radisson University Hotel, Minneapolis; CONTACT: Office CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mi neapolis, MN 55455; 612/373-8012.

7-8 Clinical Hypnosis; University of MN, CME; Earle Brow Center, Univ. of MN, St. Paul; CONTACT: University of MN, Office CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 5545 612/373-8012

7-8 Advances in Stroke Management; Abbott Northwestern Ho pital; Plaza Hotel, Minneapolis; CONTACT: Sally Ventres, Abb Northwestern Hospital, 800 East 28th St., Minneapolis, MN 5540 612/874-4300.

7-9 Surgery for Primary Care; University of MN, CME; Cr gun's, Brainerd, MN; CONTACT: University of MN, Office of CM Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012

14-15 Hospital Nutrition Support; University of Minnesot CME; Radisson University Hotel, Minneapolis; CONTACT: University Minnesota, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Mi neapolis, MN 55455; 612/373-8012.

20-22 Behavioral Pediatrics; University of Minnesota, CM Earle Brown Center, University of MN, St. Paul; CONTACT: Universi of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Mi neapolis, MN 55455; 612/373-8012

24-26 Breast and Endocrine Surgery; University of MN Medic School, Department of Surgery; Willey Hall, University of Minnesot Minneapolis; CONTACT: University of MN, Office of CME, Box 2 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

AUGUST, 1985

1-4 Second Annual St. Paul-Ramsey Trauma Conference; St. Pau Ramsey Medical Center; Fox Hills Resort, Mishicot, WI; CONTAC Ruth K. McIntyre, 612/221-3980.

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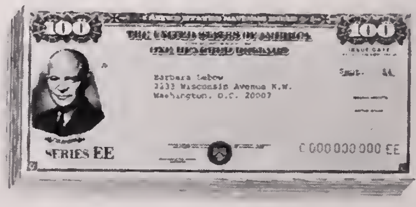

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The Community Health Education Network

SALLY G. SWALLEN, B.A.*

THE STATE OF MINNESOTA accepts the principle of normalization. The normalization principle means "making available to all mentally retarded people patterns of life and conditions of everyday living which are as close as possible to the regular circumstances and ways of life of society."[1] This acceptance is emptying our state institutions for retarded people.[2] Deinstitutionalization, coupled with legislative programs that provide subsidies to enable parents to keep their retarded child in the home, rather than in a state financed facility, means more people with mental retardation will be living in the community.[3] They will be using community health services. Current health care givers will see more handicapped people in their practices than they were prepared for by their medical or nursing schools.

In 1971 there were 1,542 mentally retarded people in Faribault State Hospital, the receiving hospital for Hennepin County. Today, there are fewer than 725.[4] The story is similar at the other state hospitals. Some have been closed. Adequate knowledge of health care practices is one of the necessities for successful community living. Mentally retarded people often need education about health care services and how to use them.

A Young Man with a Sore Throat

In 1979 a young mentally retarded man came to the Uptown Community Clinic in Minneapolis. He had a sore throat, but no appointment. With some help from staff, he was able to fill out the new patient form. He had no difficulty with the culture procedure, but he was surprised to learn that he was expected to pay. Apparently, in the past, someone else had always taken care of payment for him. Two days later, the payment arrived in the mail.

Community Involvement Program

Noting that the return address on the envelope was the Community Involvement Program (CIP), the Administrator of the Clinic made an appointment to visit the agency. The Community Involvement Program was a Semi-Independent Living Service (SILS), a program that trains mildly retarded people for independent living. It is less than 24 hour a day supervision. There are about 50 of these services in Minnesota.

According to the program nurse, many of the young people graduate from the program without sufficient experience in handling their own medical or dental care. There are problems of both over and under utilization of service, lack of familiarity with appointment procedures, and difficulty with medical vocabulary and written material.

Uptown Clinic Pilot Project

The result of this meeting was a series of inservice sessions at the Uptown Community Clinic, held during 1980, to help staff members become more knowledgeable and sensitive to the special needs of patients with mental retardation. Residents of C.I.P were encouraged to use the clinic when appropriate. They gradually became so comfortable with the kind of care they received at the clinic that they recommended the clinic to friends who were in other SILS, or living independently. Staff members, at first dubious about their ability to relate to these patients, became enthusiastic about working with their new clients.

Community Health Education Network (CHEN)

The Association for Retarded Citizens Minnesota (ARC-MN), learning of the project, decided to broaden the service area. The clinic administrator left the clinic to direct an expanded project for the ARC-MN. 1981 was spent in raising funds for a three year demonstration project. Money was given by foundations, businesses and individuals. In January of 1982, the Community Health Education Network (CHEN) was launched. Twelve community clinics in the state were enrolled in the network. Community clinics, once known as Free Clinics, are no longer free. But, with their personal and informal atmosphere, low fees, an emphasis on preventive medicine, offered ideal settings for working with mentally retarded people.

Clinic Training Sessions

Inservice sessions were held in each clinic. The first covered basic information about mental retardation. In the second session the two project staff members registered as new patients and role-played SILS clients. The purpose of this was to see where mentally retarded clients might fall through the cracks of clinic procedures. Clinic staff members, although aware of the identity of the CHEN staff, were instructed to react as they would if the situation were real. Pretended difficulty with reading written instructions, concrete thinking, slowness of response and failure to remember medical history were some of the curves tossed to clinic personnel.

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*Director, Community Health Education Network, Association for Retarded Citizens Minnesota, Minneapolis, Minnesota.

Role of the Receptionist

It became obvious that the receptionist was a key person in setting the tone for client attitudes toward subsequent encounters with clinic staff. Some noticed the supposed difficulty of CHEN staff in filling out the new patient form, and stepped in gracefully and unobtrusively. Others let the ‘‘new client’’ sit in the reception room for as much as an hour, working on the form, without offering assistance.

A third inservice was scheduled to include all personnel, doctors, nurses, lab technicians, office staff, etc. The perceptions of CHEN staff, developed during the time as ‘‘retarded patients’’, were shared and suggestions made for solving potential problem areas.

Difficulty with Handouts

One difficulty was posed by the medical handouts, which were used to explain various diseases and treatment plans. They were well written and informative, but often the language was complex. The solution was to prepare special materials. Seventeen handouts were developed using drawings and simple words to explain procedures such as caring for a cold, the birth control pill, dental care, taking medicine, etc. Clinic staff began using these for elderly patients, some adolescents, clients with learning disabilities, or those who speak English as a second language, as well as for patients with mental retardation.

Semi-Independent Living Service Staff

After working with the clinics, project staff began working with SILS staff. They were given help in teaching their clients skills, such as making medical and dental appointments, filling out medical history forms, describing the symptoms of an illness and taking medications. However, many SILS are not near a community clinic. Additional services were needed to aid them. A toll free telephone consultation and referral service was added. CHEN staff began to research special needs, such as locating picture cookbooks for non-readers, and anatomically correct dolls for teaching of hygiene and sexuality. A lending library of books, slide shows, and curriculums was developed. Although the original focus was on medical and dental education, additional gaps appeared. Non-reader’s nutritional needs suffer if they rely on fast foods because they cannot read standard cookbooks. Both emotional and physical health can be jeopardized by those vulnerable to sexual advances. The project now has several hundred items in its lending library, classified under Socialization and Sexuality, Living Skills, Medical, Dental, Mental Health, Cooking and Nutrition, Employment (You need a job to pay for the food and medical services that keep you healthy), plus a large section of catalogs. Some items are to be used in teaching health skills to people with mental retardation. Others are directed toward professionals working with retarded people, to help them increase their knowledge of the field.

Expansion of Services

During 1982, community agencies were informed of CHEN services. 76 inservice sessions were held in human service and public health departments, recreation programs, and residential facilities. Update inservices were held in the community clinics. As the project became more visible, private providers of medical and dental care requested service. Information, referral and inservices have been given to doctors and dentists and their staffs. Six classes were taught in St. Mary’s School of Nursing. Four lectures were given in the University of Minnesota School of Dentistry. The University of Minnesota Medical School responded positively to comments on the existing syllabus on mental retardation by extensive revision.

In 1983, many requests for service were received from Rule 34 Intermediate Care Facilities for Mentally Retarded people (group homes) to meet their needs. Funding was sought and received from a foundation. Rule 34 group homes provide 24 hour a day supervision. They generally serve a more handicapped, and often younger population than the SILS. At the present time, CHEN has not offered its services to agencies for young children, although it often fields requests from individual parents for information and referral.

Three workshops have been held. The 1982 workshop featured a panel of four retarded people talking about their experiences in the health care system. The audience totaled 16 people. In 1983, the University of Minnesota provided a nutritionist to discuss nutrition for low income clients. The audience numbered 35.

Four speakers, fees paid by the Minneapolis Technical Institute, spoke on Dual Diagnosis — Mental Illness and Mental Retardation, and Sexuality and the Mentally Retarded, to an audience of 150 in 1984.

CHEN staff have been invited to Wisconsin to describe the project. An article about CHEN in the May, 1983 Human Development News (a publication of the Federal Department of Human Services) plus another article in the Association for Retarded Citizens United States Newsletter have prompted over 440 requests for information and materials.

The old saw of the idea whose time has come seems to apply to the project. The current of deinstitutionalization, joined by the current health care professionals' interest in locating new populations to serve, has produced a tide of concern and interest in people with mental retardation. To the best of our knowledge, the Community Health Education Network is the first project of its kind in the nation. We are hopeful that its success will encourage similar projects to enable people with mental retardation to live healthy, independent lives in their communities. CHEN services will continue as a public service of the Association for Retarded Citizens Minnesota.

Footnotes

1. Bengt Nirje, Director of Care, Uppsala, Sweden.
2. Welsch vs. Levine Consent Decree, 1980.
3. Minnesota Statute 252.27, Sub Division 4.
4. Minnesota Department of Human Services.

Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

1. Preferably an alumnus of the University of Minnesota Medical School.
2. Not engaged in an academic capacity.
3. Has made outstanding contributions to the Medical School, the University, the Alumni, and the community.
4. Has had a relatively long experience in the field of medical science or a related field.

Nominations for the 1985 awards should be sent immediately to:

Konald A. Prem, M.D., Chairman,
Harold A. Diehl Award Committee
Box 395, University of Minnesota Hospitals
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Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.

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(Continued on page 244)

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(Continued from page 243)

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(Continued on page 246)

(Continued from page 245)

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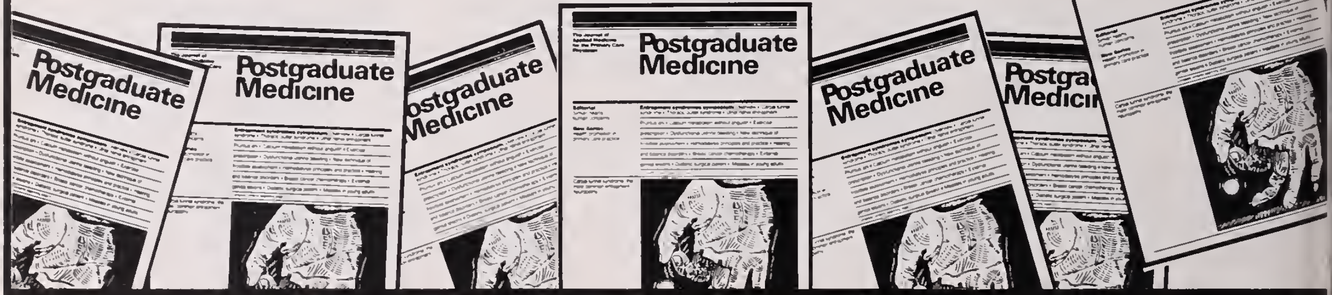

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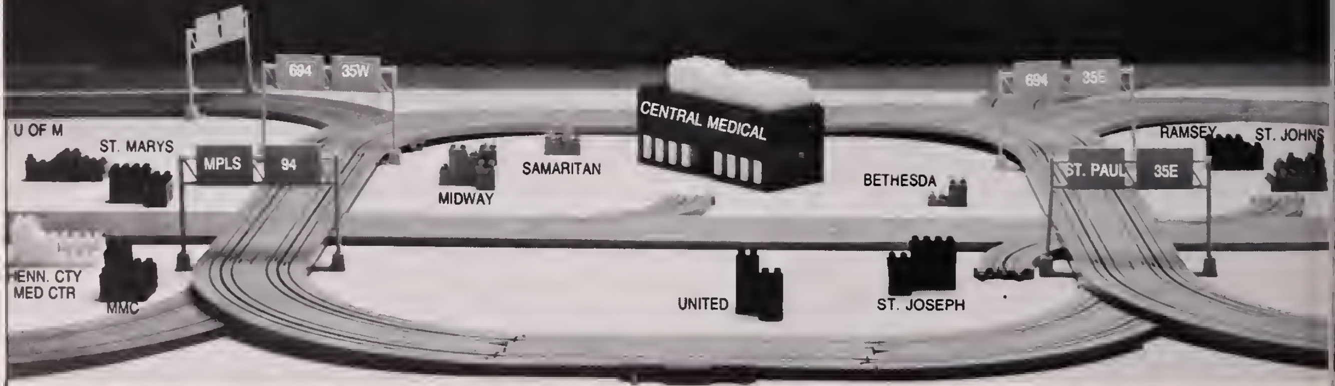

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Physicians Philanthropic Foundation of the MMA

To MMA Members . . . .

Harold W. Brunn retired from the Minnesota Medical Association on September 1, 1984, after 32 years of dedicated service to MMA. The 1984 MMA House of Delegates requested that, in recognition of his long time interest in medical students, a Harold W. Brunn Fund be established to assist medical students. I am pleased to announce the creation of the Harold W. Brunn Fund by the Board of Directors of the Physicians Philanthropic Foundation of the MMA. Your contributions will recognize Harold's dedication to our profession and will be used for low interest loans to needy medical students. Please designate the Harold W. Brunn Fund with your contribution.

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President's Letter

Peer Review for Profit?

The recent release of physician specific data by MedTrac, the wholly owned, for profit arm of the Foundation for Health Care Evaluation, raises an ethical issue of releasing confidential data regarding physicians for profit. When data is released on providers by a company that is expressly set up to make a profit, the following ethical questions can be raised:

1. How can this data be reviewed as peer review of physicians by other physicians when it predominantly represents the business interest?
2. If physicians get paid for peer review, does it remove their objectivity? Doesn't it give the perception that the reviewing doctor has to support the party line or he might be dismissed?
3. Even though we were told that data was not released for profit, MedTrac seemed to assure its continuity by showing its supporters it was "doing something".
4. It appears to be a cost control mechanism rather than an effort to monitor quality of care.
5. There appeared to be a rush to get this data to private companies despite pleas to delay their action by the Minnesota Medical Association, the Hennepin County and the Ramsey County Medical Societies. Serious questions were raised regarding data accuracy, age of data, notification, punitive versus peer review process and education, due process accorded to the providers named, and the true purpose of the release. It was further pointed out to the Foundation that a data release policy was soon to be released by the Minnesota Medical Association, and, in fact, it was released the day following the data release. The Foundation for Health Care Evaluation ignored this advice and released the data. It appears, if not in fact, by perception or implication that this was done to satisfy the supporting companies that "something was being done" to justify the continued operation of MedTrac. The Foundation for Health Care Evaluation could not answer how private companies were going to use this data. Since we've been sold this past year, I wonder what we're going to be sold for this coming year? Peer Review implies to me an educational process whereby you can see where you are located in the herd and make corrections where needed. Dr. Joseph Boyle, President of the American Medical Association, said at the Leadership Conference in Chicago on February 15, 1985 that "If physicians are aware of variations in their practice, they will change that pattern of practice."

In conclusion, I seriously doubt whether there should be peer review for profit. MedTrac should be restructured as a nonprofit corporation. If it does its job, companies will support it. If it doesn't, another mechanism should be developed. I further urge that the MedTrac Board review the MMA guidelines on data release, and I feel the dilemma that they got themselves into would have been prevented.

Thomas G. Briggs M.D.

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Minnesota Medical Association

Candidates for 1985 Offices Nominated

These profiles are of physicians nominated by the MMA for election at the 1985 MMA House of Delegates' meeting on May 10, 1985. Additional nominations may be made from the floor of the House.

President-Elect

James F. Knapp, M.D.

A board certified family physician, Dr. Knapp has practiced in Detroit Lakes since 1961. Currently, he is an AMA alternate delegate, a member of the AMA Health Policy Agenda Advisory Committee, chairman of the Minnesota Medical Services Corporation (MMSC) Board of Directors, and chairman of the Board of Directors of the Professional Information Services Corporation (PIC), both wholly or partially owned by the MMA.

In 1966 Dr. Knapp served as president of the Clay-Becker County Medical Society, and in 1975 he was elected to the MMA Board of Trustees. The trustees elected him chairman of the MMA Board in 1979, and he served in that capacity until 1982 when he was elected to the AMA House of Delegates as an alternate delegate and subsequently re-elected in 1984.

He has served on the MMA Long-Range Planning Committee, the Administration and Finance Committee, and the Interspecialty Council as chairman. Dr. Knapp chaired the William Jacott, M.D. Re-election Committee for the AMA Council on Medical Information in 1984.

Dr. Knapp is active in the Minnesota Academy of Family Physicians having served as a delegate and a member of the Board of Directors and as president of the Heart of Lakes Family Practice Chapter.

Lawrence M. Poston, M.D.

Dr. Lawrence M. Poston is board certified in family practice, and he has been in solo family practice in Caledonia since 1964.

A vice speaker of the MMA House of Delegates from 1978 to 1980, Dr. Poston was elected to the MMA Board of Trustees from the Southeast District in 1980 and continues to serve on the Board.

From 1966 through 1981, he served in the MMA House of Delegates as an alternate delegate and subsequently as a delegate. Active on numerous MMA committees, Dr. Poston's service includes Family Practice, Membership, Health Sciences Liaison, and Ethics.

Dr. Poston is a member of the AMA, the Zumbro Valley Medical Society, the Minnesota Academy of Family Physicians, the American Academy of Family Physicians.

Vice-President

Leland G. Reichelt, M.D.

Board certified in family practice, Dr. Leland G. Reichelt has practiced for 26 years with a multispecialty group in Wadena. He is currently serving as the vice-president of the Minnesota Medical Association. A past president of the Upper Mississippi Medical Society and a member of the AMA, he has been active on a number of MMA committees. For the past ten years, Dr. Reichelt has been a delegate to the MMA House and has chaired and served on several Reference Committees of the House.

In 1964, Dr. Reichelt received the Distinguished Service Award from the Wadena Jaycees for his contributions to the community, and in 1968 he served as chief-of-staff at the Wesley Hospital in Wadena. He is a former clinical assistant professor with the University of Minnesota Family Practice Department.

L. Ashley Whitesell, Jr., M.D.

Dr. L. Ashley Whitesell, Jr., is board certified in family practice and has practiced with a multispecialty group in Buffalo since 1965. Dr. Whitesell currently serves as the chairman of the MINNPAC Board of Directors, a position he has held for the past eight years.

He has served on MMA committees including Rural Medical Service, Hospitals and Professional Relations, and the Interspecialty Council. Since 1975, Dr. Whitesell has been a delegate in the MMA House of Delegates and has chaired Reference Committees. He is a member of the AMA, the Minnesota Academy of Family Physicians, the American Academy of Family Physicians and the Wright County Medical Society.

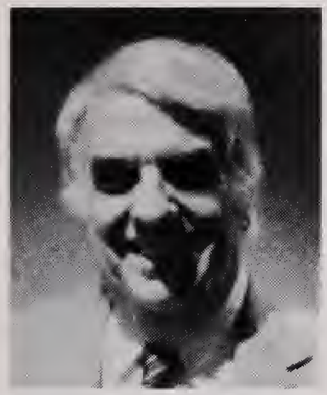
Secretary

Ellen R. Stubbs, M.D.

Dr. Ellen R. Stubbs is board certified in family practice and has practiced in St. Paul since 1974. Dr. Stubbs was elected MMA secretary in 1983, after serving as vice-president of the MMA.

She chairs the Committee of Women Physicians, serves on the MMA Administration and Finance Committee, and represents the Ramsey County Medical Society in the MMA House. Dr. Stubbs has been active on Ramsey County Medical Society Committees, and she is a member of the AMA.

Treasurer



Joseph A. Cella, Jr., M.D.

Board certified in obstetrics and gynecology, Dr. Joesph A. Cella, Jr., practices in Minneapolis with a specialty group. He was elected treasurer of the MMA in 1984, after serving on the MMA Administration and Finance Committee for ten years.

Dr. Cella also served in the MMA House of Delegates and in the Hospital and Professional Relations Committee. He is active in the Minnesota Division of the American Cancer Society as a past president, and he was president of St. Mary's Hospital in 1974. He is a member of the AMA and the Hennepin County Medical Society.

Speaker

Richard K. Simmons, M.D.

Dr. Richard K. Simmons is board certified in family practice, and he has practiced in Bloomington since 1958. He was elected speaker of the MMA House of Delegates in 1981 after serving as vice-speaker. Dr. Simmons has served on numerous MMA committees including Child Health, Family Practice, Awards, and the Executive Committee.

Recipient of the Minnesota Academy of Family Physicians Merit Award in 1979, Dr. Simmons has served the Academy in numerous capacities. He is a member of the AMA, and he was a director of the Hennepin County Medical Society from 1973 to 1976. He was president and chairman of the Board of the Physicians Health Plan from 1978 to 1981 and currently is its medical director.

Vice Speaker

John J. Graham, M.D.

Dr. John J. Graham is board certified in obstetrics and gynecology. He is the director of medical affairs at Fairview Southdale Hospital, a position he accepted in August 1984 following fifteen years of clinical practice in Minneapolis.

Active in peer review, Dr. Graham serves on the Executive Board of the American Peer Review Association, and he is a past chairman of the Foundation for Health Care Evaluation Board.

In 1983, he was selected to serve as a member of the BC/BS Physician Coordinating Committee. He represents the Minnesota OB-GYN Society in the MMA House of Delegates. Currently he chairs the Physicians Metro Health Force, is a member of the Committee on Medical Practice and Planning, and is the treasurer of the Hennepin County Medical Society. He is a member of the AMA.

John E. Sutherland, M.D.

Dr. John E. Sutherland is board certified in family practice. Currently, he is assistant professor and program director, Department of Family Practice and Community Health, University of Minnesota Medical School.

He has served as the vice speaker of the MMA House of Delegates since 1983. His other MMA activities include chairing the Communications Committee, serving on the MINNPAC Board, and on the Interspecialty Council. Dr. Sutherland chaired the Ad Hoc Committee on Public Relations and served on the PPO Committee.

Dr. Sutherland currently serves as an alternate delegate to the Amercian Academy of Family Physicians. In 1982 he served as president of the Minnesota Academy of Family Physicians. He is a member of the AMA and the Hennepin County Medical Society.

MMA Board of Trustees Reports 1985 AMA Delegate and Alternate Delegate Nominees

The MMA Board of Trustees submits the AMA Delegate and Alternate Delegate nominees whose profiles follow. The election will take place during the May 10, 1985 session of the MMA House of Delegates.

Two year terms will commence on January 1, 1986.

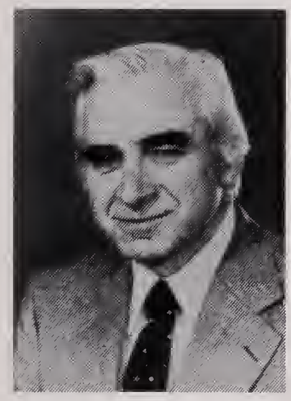
Delegates

Three candidates were nominated for the three delegate positions to be filled. Nominations will be accepted from the floor of the House.

Thomas G. Briggs, M.D.

Dr. Thomas G. Briggs is board certified in family practice and practices in White Bear Lake. Currently, Dr. Briggs is president of the MMA and vice president of the Physicians Philanthropic Foundation of the MMA. He was elected an AMA alternate delegate in 1983.

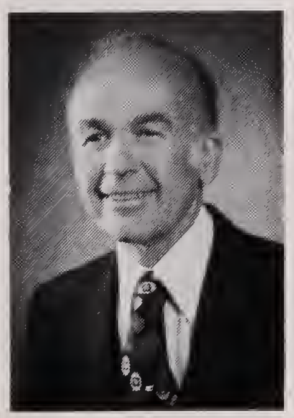
Dr. Briggs served as secretary of the MMA and as a member of the MMA Administration and Finance Committee and on numerous other MMA committees. He is past president of the Ramsey County Medical Society.



Richard J. Frey, M.D.

Dr. Richard J. Frey is board certified in internal medicine and practices in Minneapolis. He was president of the Hennepin County Medical Society in 1966 and chairman of the MMA Board of Trustees from 1974 to 1979. He served on the MMA Board from 1967 to 1979.

He chaired both the MMA Commission on Health Care Costs and the Minnesota Coalition on Health Care Costs and served as an officer of the Foundation for Health Care Evaluation. Dr. Frey received the Shotwell Award in 1978 as well as the MMA Distinguished Service Award. He was elected an AMA Delegate in 1981 and re-elected in 1983.



John K. Meinert, M.D.

Dr. John K. Meinert is board certified in internal medicine and practices in Willmar. In 1980, he was president of the MMA and in 1970 was president of the Kandiyohi-Swift-Meeker County Medical Society.

Dr. Meinert was first elected to the post of AMA Delegate in 1981 and re-elected in 1983. He has served on the MMA Board of Trustees, chaired numerous MMA committees, served on several committees, and is an associate editor of MINNESOTA MEDICINE. In 1984 Dr. Meinert was elected to the Board of Minnesota Medical Management, Inc. He is a member of the Mid-Minnesota Medical Society.

Alternate Delegates

Two candidates were nominated for the three alternate delegates positions to be filled.

Nominations will be accepted from the floor of the House.

A. Stuart Hanson, M.D.

Dr. A. Stuart Hanson was elected an AMA Alternate Delegate in 1981 and re-elected in 1983. He is board certified in pulmonary diseases and internal medicine and practices in St. Louis Park and Minneapolis.

He served as chairman of the Physicians Metro Health Force and was appointed to the West Metro Trustees Council Issues Task Force. Dr. Hanson has served on numerous MMA committees including the Legislative Committee and the Ad Hoc Committee on Health Care Competition and Regulation. Currently he is a member of the Metropolitan Health Planning Board and the Hennepin County Medical Society and president of the Minnesota Coalition for a Smoke-Free Society 2000.

Ben P. Owens, M.D.

Dr. Ben P. Owens is board certified in family practice and practices in Hibbing. In 1982, Dr. Owens was named Minnesota's Family Physician of the Year by the Minnesota Academy of Family Physicians.

He has served as an AMA Alternate Delegate since 1980. Dr. Owens has served on numerous MMA committees and in the MMA House of Delegates. He has been active in the Range Medical Society and was elected its president in 1960.

Prostatic Abscess with Adult Respiratory Distress Syndrome

DAVID S. ARVOLD, M.D.*

A 25-year-old diabetic man presented with acute prostatitis and urinary retention. Despite broad spectrum antibiotic coverage and repeatedly negative blood cultures, he developed adult respiratory distress syndrome, oliguric renal failure, and died. At postmortem, a large prostatic abscess was found. A brief review of prostatic abscess, with diagnostic and treatment approach, is presented.

FOR MANY PHYSICIANS trained in the antibiotic era, prostatic abscess is a seldom encountered problem. The following case is presented to remind contemporary physicians of the entity, report the occurrence of adult respiratory distress syndrome associated with this patient's abscess, and review the presenting features and current diagnostic alternatives. A review of the English literature since 1970 showed only three articles related to prostatic abscess — two of these discussed anaerobic culturing of a total five patients[1,2] and the third article was a report from South India.[3] Most previous series in the antibiotic era are from Britain.

Case History

A 25-year-old Type I diabetic man was admitted to the hospital with fever and acute urinary retention. Two weeks prior to admission he developed an infected sore on his left elbow at the site of superficial trauma — it drained pus one week later. He noted low back pain two days before admission after some heavy lifting the day before. (Previous episodes of acute lumbosacral strain had occurred.) He was seen the day before admission, at which time a culture of the elbow was taken (subsequently growing Group A beta strep). Oral dicloxacillin and local wound care was begun, along with a conservative rest program for his presumed lumbosacral muscle strain.

The following day he developed dysuria, anorexia and malaise, and presented to the emergency room unable to void. He denied fever, chills or perineal pain.

Past history revealed diabetes for 15 years duration with complications of proliferative retinopathy and sensory neuropathy of his legs. His diabetic control had generally been suboptimal. He had a remote episode of facial swelling possibly related to Penicillin. His only other medication was split dose NPH and Regular insulin.

On examination he was in no distress with a temperature of 38.4 degrees centigrade and pulse of 120 beats per minute. Findings included mild lower abdominal tenderness, a huge, boggy, tender prostate, and percussion tenderness of the lumbosacral spine and both costovertebral angles. Urinalysis showed pyuria and a few bacteria — culture was sterile. His white blood count was 27,700/cm^3 and creatinine 1.1 mg per deciliter. The patient was begun on cefazolin for acute bacterial prostatitis and a Foley catheter was inserted. He improved over the next 36 hours, although an attempt to discontinue the Foley resulted in recatheterization. On the evening of the third hospital day significant left epididymo-orchitis developed, followed several hours later by chills and temperature rise to 39 degrees centigrade. Re-examination of the prostate again showed bogginess. Blood and urine cultures were obtained (and both subsequently negative) and tobramycin was begun. He felt well again by morning and his orchitis was much improved.

Urologic consultation was obtained regarding suprapubic catheter placement, and was felt not indicated. Renal ultrasound was unremarkable (he continued to have bilateral costovertebral tenderness). That evening he again spiked a temperature, had chills and acute respiratory distress along with severe hypoxemia, with partial pressure of oxygen ($Pa0_2$) of 31 mm Hg. Chest Xray revealed diffuse bilateral alveolar infiltrates. Swan Ganz catheterization showed pulmonary artery pressure of 36/6 mm Hg, and cardiac index of 5.25 liters per minute. Both systemic and pulmonary vascular resistance were within the normal range. A presumptive diagnosis of adult respiratory distress syndrome was made. The patient received high dose intravenous steroids, along with additional antibiotic coverage in the form of intravenous trimethoprim sulfamethoxazole, substitution of erythromycin for cefazolin, along with continued aminoglycoside coverage. Mechanical ventilation with positive end expiratory pressure of 15-18 mm Hg and oxygen concentrations of over 50 percent were required to maintain a partial pressure of oxygen between 40 and 60 mm Hg. Infectious disease and pulmonary consultants were actively involved in his management.

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*Department of Internal Medicine, Duluth Clinic, Ltd., Duluth.

The following two days saw the patient stabilize clinically and re-examination of his prostate by the urologist showed less tenderness and no asymmetrical swelling. Subsequently his clinical status deteriorated — he complained of both lower and upper abdominal pain with right upper quadrant guarding. A repeat renal ultrasound and intravenous pyelogram showed no evidence of obstruction or perinephric abscess. Plain films of the abdomen showed no free air. He became oliguric, then anuric with rising creatinines, and expired following his second cardiac arrest after emergency hemodialysis.

Postmortem examination demonstrated a large prostatic abscess which enveloped the entire urethra. Lung findings were consistent with adult respiratory distress syndrome and renal exam was normal save mild to moderate diabetic nephrosclerosis. Cultures from the prostatic abscess grew Group D non-enterococcal streptococci plus staphylococcus epidermitis.

Discussion

This case poignantly illustrates Youngen and Persky's statement in 1967 that "because of its relative rarity, prostatic abscess is infrequently considered in the differential diagnosis of disease of the lower portion of the urinary tract."[4] Reviewing the literature on the subject shows that abscess of the prostate can present in a number of ways.[3-7] In some cases it is an unsuspected finding at prostate surgery for outlet obstruction presumed secondary to benign prostatic hypertrophy. More typically it presents in the clinical course of an "acute prostatitis", with continued or heightened fever and development of perineal discomfort. Even with an index of suspicion, prostatic abscess can present a challenge to diagnosis. Differentiation from uncomplicated prostatitis, the frequent lack of fever or systemic symptoms, an often short period of illness (less than seven days), and hesitancy to repeatedly palpate an acutely inflamed gland are all factors which impede the correct diagnosis. The individual physician, even in a referral center, is unlikely to accumulate experience in recognizing and treating this disorder. The last published series of more than four patients in the United States was Youngen et al. in 1967, who reported 28 patients seen over the preceding 21 years.[4]

A review of five series of patients from 1945 to 1970 showed the following presenting symptoms occurring with the frequencies listed.[3-7]

Frequency and/or dysuria — 50 percent
Fever — 30-50 percent
Urinary retention — 30-40 percent
Perineal or suprapubic pain — 33 percent
Epididymitis — orchitis — 10-15 percent
Constitutional symptoms — 10-30 percent

Among preceding urologic conditions, benign prostatic hypertrophy or other outlet obstruction was present in roughly one-half the patients. However, there is disagreement as to the role it plays. In some patients an infected pool of residual urine may serve as a source of infection via direct penetration of the posterior urethra, while in others (primarily those with Staph aureus abscess) metastatic blood born spread is considered the primary route of infection. Occasionally, an indwelling Foley catheter may play a role, obstructing prostatic drainage. In Pai's series of 24 patients, three had an indwelling catheter.[3]

The possible aggravating role of the Foley catheter was debated in this case — one author has stated "any bladder outlet obstructive symptoms caused by the inflammation and swelling of the infected prostate are probably best treated with a temporary percutaneous suprapubic catheter. This will prevent further irritation of the prostate that a urethral catheter may cause."[8] The pathophysiology of our patient's prostatic abscess could have been either metastatic (from his elbow sore) or direct posterior urethral penetration. The Staph epidermitis in his abscess pointed to a metastatic — hematogenous route from skin. The group D non-enterococcal streptococci was probably S. bovis, which has been associated with genitourinary infections, as well as gastrointestinal disease. It must be emphasized that a large proportion (a majority in several series) had no preceding urologic history, as with our case.

Diabetes was present in strikingly variable percentages in the five series — from 4 percent in two series totalling 52 patients, to 66 percent in Pai's series from India.[3-7] In the case presented, poorly controlled diabetes was felt to play a role not only in the development of the prostatitis and abscess, but probably also in altered host defenses, leading to his rapid downhill course.

The bacterial spectrum of prostatic abscess has changed markedly over the past 50 years. Prior to the antibiotic era, gonococcus was a major pathogen — with wide spread use of antibiotics, today it is rarely found. In the five series reviewed, gram negative enteric organisms were cultured from the abscess or its drainage approximately 50 percent of the time, Staph aureus in 10 to 20 percent, and a mixed flora in 10 to 24 patients in one series.[3-7] As more careful culturing techniques have been used, a complex anaerobic — aerobic flora is being found. In Bartlett's study of four cases, Bacteroides fragilis and other anaerobes were found in each case, along with coliforms.[2] Because of this finding, empiric antimicrobial drugs used in the initial treatment of acute bacterial prostatitis with potential abscess and/or septicemia should probably include an aminoglycoside for coliforms and clindamycin or chloramphenicol for anaerobes. Anaerobic cultures from transperitoneal needle aspirates or exudates from surgical drainage procedures should be obtained. Routine urine culture will show an infecting organism in only one-half the patients.[6]

Ultrasound or computed tomography of the prostate has been described in recent years as a diagnostic aid for a variety of diseases of the prostate.[9-12] Gammelgaard and Holm published an ultrasonic demonstration of a prostatic abscess in their 1980 review of ultrasonic scanning of the prostate.[11] Transrectal, transurethral and perineal ultrasound has been utilized by various investigators. The use of these diagnostic modalities should be considered in cases of possible prostatic abscess.

The development of adult respiratory distress syndrome is a known sequelae of both gram positive and gram negative bacteremia. Although the patient's multiple blood cultures were negative, he was clinically septic and continuously on antibiotic therapy (an antibiotic retrieval device was used in obtaining his cultures). Fowler et al. described nine patients who developed ARDS after clinical sepsis who did not develop positive blood cultures in a 1983 series — they found that the incidence of respiratory failure after bacteremia alone was 8 percent.[13] This percentage increased substantially if other risk factors were present, particularly direct pulmonary injury such as aspiration of gastric contents. There was no evidence of direct pulmonary injury in our patient.

Finally, the successful treatment of prostatic abscess involves drainage by one of several modes — perineal needle aspiration, perineal incision, retropubic prostatectomy, and endoscopic techniques (rupture using the beak of the cystoscope or transurethral resection to unroof the abscess) have been used. The latter procedure (transurethral resection) seems to be the procedure favored by urologists publishing the most recent series.[4-6] The cavity can drain spontaneously into the rectum, urethra, or even (less favorably) into the peritoneal cavity. Epidural abscess is another reported complication[3], with infection traveling via Batson's venous plexus.

As this case illustrates, prostatic abscess, particularly in a diabetic patient, can be a lethal event. In combining five series totalling 221 patients, the mortality was 2.6 percent, or six patients.[3-7] Three died of septic complications, the others of pulmonary embolus, uremia, and epidural abscess. There was no mention by any of these authors of the development of a clinical picture compatible with adult respiratory distress syndrome in any of their patients.

Summary

A 25-year-old diabetic with acute prostatitis, urinary retention, and subsequent adult respiratory distress syndrome was found at postmortem exam to have a large prostatic abscess which grew Staph epidermitis and Group D non-enterococcal streptococci. The presence of acute prostatitis in a diabetic patient should alert one to the possible development or presence of a prostatic abscess. Other clues include persistence or development of perineal pain, continued fevers, or urinary retention in patients with prostatitis. Often these patients will have no preceding urologic history and a short duration of symptoms. Consideration of ultrasonic or computerized tomography as a diagnostic aid is discussed, and the complex anaerobic — aerobic flora of these abscesses is reviewed.

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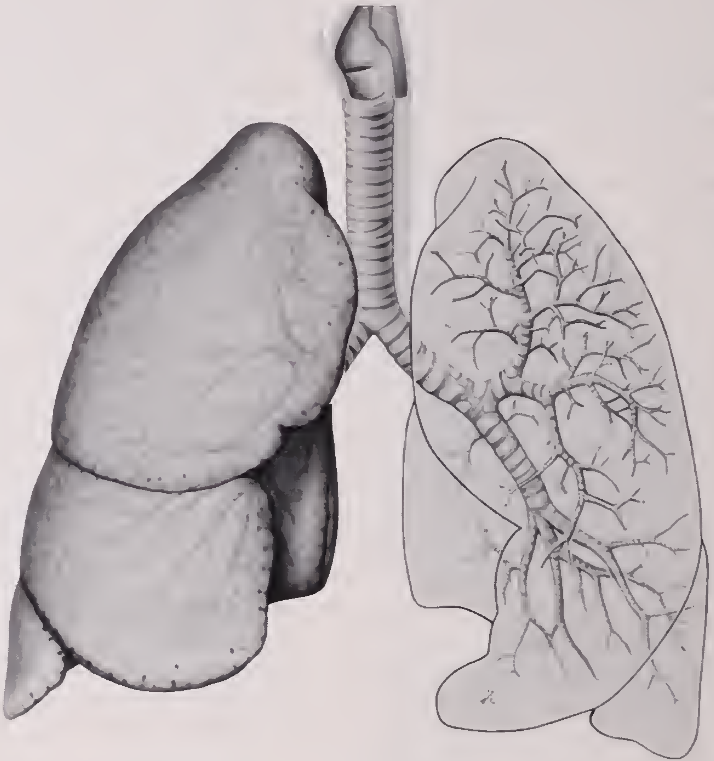
Consider the causative organisms...



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Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae), Haemophilus influenzae* and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS INCLUDING ANAPHYLAXIS TO BOTH DRUG CLASSES

Antibiotics including Ceclor should be administered cautiously to any patient who has demonstrated some form of allergy particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins and cephalosporins) therefore it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases management should include sigmoidoscopy appropriate bacteriologic studies, and fluid, electrolyte and protein supplementation When the colitis does not improve after the drug has been discontinued or when it is severe oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by C *difficile* Other causes of colitis should be ruled out

Precautions *General Precautions* – If an allergic reaction to Ceclor® (cefaclor, Lilly) occurs the drug should be discontinued and if necessary the patient should be treated with appropriate agents, e g pressor amines antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict s and Fehling s solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip USP Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease particularly colitis

Usage in Pregnancy – Pregnancy Category B – Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor® (cefaclor, Lilly) There are however, no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed

Nursing Mothers – Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18, 0 20, 0 21, and 0 16 mcg/ml at two, three four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor is administered to a nursing woman

Usage in Children – Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported half of which have occurred in patients with a history of penicillin allerg

Other effects considered related to therapy incl eosinophilia (1 in 50 patients) and genital pruritus or (less than 1 in 100 patients)

Causal Relationship Uncertain – Transitory abno clinical laboratory test results have been reported Al were of uncertain etiology, they are listed below to alerting information for the physician

Hepatic – Slight elevations in SGOT, SGPT, or al phosphatase values (1 in 40)

Hematopoietic – Transient fluctuations in leuk predominantly lymphocytosis occurring in infants and children (1 in 40)

Renal – Slight elevations in BUN or serum creatinin 1 in 500) or abnormal urinalysis (less than 1 in 200)

Note Ceclor® (cefaclor, Lilly) is contraindicated in p with known allergy to the cephalosporins and should cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatm prevention of streptococcal infections, including the of rheumatic fever See prescribing information

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CARDIZEM®
(diltiazem HCl)

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Please see full prescribing information on following page.

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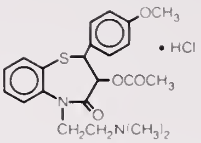
PROFESSIONAL USE INFORMATION

cardizem®
(diltiazem HCl)
30 mg and 60 mg tablets

DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

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2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are. edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), asthenia (1.2%), AV block (1.1%). In addition, the foll were reported infrequently (less than 1%) with the orde tion corresponding to the relative frequency of occurr

Cardiovascular:	Flushing, arrhythmia, hypotensi dia, palpitations, congestive syncope.
Nervous System:	Paresthesia, nervousness, tremor, insomnia, hallucinations.
Gastrointestinal:	Constipation, dyspepsia, diarrh mild elevations of alkaline phosp SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, ph
Other:	Polyuria, nocturia.

The following additional experiences have been no

A patient with Prinzmetal's angina experiencing vasospastic angina developed periods of transient asystole approximately five hours after receiving a dose of CARDIZEM.

The following postmarketing events have been r quently in patients receiving CARDIZEM: erythema m kopenia; and extreme elevations of alkaline phosph SGPT, LDH, and CPK. However, a definitive cause and e these events and CARDIZEM therapy is yet to be est.

OVERDOSAGE OR EXAGGERATED RESPC

Overdosage experience with oral diltiazem has Single oral doses of 300 mg of CARDIZEM have been by healthy volunteers. In the event of overdosage o response, appropriate supportive measures should b addition to gastric lavage. The following measures may

Bradycardia	Administer atropine (0.60 to 1. is no response to vagal blocka isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above degree AV block should be tre diac pacing.
Cardiac Failure	Administer inotropic agents (i dopamine, or dobutamine) and d
Hypotension	Vasopressors (eg, dopamine o bitartrate).

Actual treatment and dosage should depend on the clinical situation and the judgment and experience o physician.

The oral/LD_{50}'s in mice and rats range from 415 t and from 560 to 810 mg/kg, respectively. The intrave these species were 60 and 38 mg/kg, respectively. Th dogs is considered to be in excess of 50 mg/kg, while seen in monkeys at 360 mg/kg. The toxic dose in man but blood levels in excess of 800 ng/ml have not bee with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosc nary Artery Disease or Angina Pectoris at Rest nary Artery Spasm. Dosage must be adjusted to e needs. Starting with 30 mg four times daily, before bedtime, dosage should be increased gradually (giv doses three or four times daily) at one- to two-day i optimum response is obtained. Although individual respond to any dosage level, the average optimum appears to be 180 to 240 mg/day. There are no available ing dosage requirements in patients with impaired re function. If the drug must be used in such patients, titra carried out with particular caution.

Concomitant Use With Other Antianginal Age

1. **Sublingual NTG** may be taken as required t anginal attacks during CARDIZEM therapy
2. **Prophylactic Nitrate Therapy**—CARDIZEM coadministered with short- and long-acting nitra have been no controlled studies to evaluate t effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTI

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles 0088-1771-47) and in Unit Dose Identification Paks 0088-1771-49). Each green tablet is engraved with M side and 1771 engraved on the other. CARDIZEM tablets are supplied in bottles of 100 (NDC 0088-1772- Dose Identification Paks of 100 (NDC 0088-1772-49 tablet is engraved with MARION on one side and 177

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Perceptions and Realities in Cancer Quackery

ONLY A FEW SHORT years ago quackery, especially in cancer, was an obvious, important issue. All forms of the media presented extensive pieces on various forms of cancer quackery. Hearings were conducted on the subject in the United States Senate. Laetrile was a household word, with an estimated 75,000 Americans using the drug at one point, and twenty-six states legalizing its use within their boundaries. By comparison, at present it seems very quiet on the quackery front. Inquiries to the American Cancer Society about quack remedies have diminished, and patients and their families are much less apt to question their physicians about unorthodox therapeutics. The media interest in quackery has dropped off dramatically, and quackery related issues have essentially disappeared in the courts and state legislatures.

One explanation for this apparent change is that we have won a major victory over quackery. As a consequence of the widely publicized exposure of laetrile as a great hoax, it may be that the medical profession, the public, and the media have become significantly more sophisticated about quackery in general. As a result of the ordeal of the 1970's, we may have evolved in the 1980's to a position of being genuinely less vulnerable to the con artists' pitch about quick fixes in cancer and other emotionally charged diseases.

Much as I would like to believe that, it is also possible that our perceptions about the decline of quackery are absolutely wrong. Quackery may be just as rampant as it was in the mid-1970s, but we may simply not be hearing about it. There are grounds to be concerned about this possibility. Most importantly, one should recognize a dramatic change in tactics among the quack promoters. In contrast to their former bold, very public hard sell of laetrile as the great panacea in the media, the courts, and the legislatures, they have adopted a much lower profile sales pitch and a much more diffuse product. Though it is still possible to identify some laetrile-like promotions (e.g. the Greek Cancer Cure, Lawrence Burton's Immunoaugmentative Therapy), most contemporary quackery is a ''holistic'' hodgepodge incorporating complicated diets, cathartics and purges, ''attitudinal changes'', and a long list of ''nutritional supplements'' and medicaments. The major marketing arm is a variety of ''wellness clinics'' and ''holistic centers'' and the vast ''health and beauty aids'' industry — all of which represent an entire world about which we in the medical profession have almost no knowledge or contact. Moreover, the promotion tends to be much less confrontational than formerly, that is, there is distinctly less emphasis on using quack therapy in place of conventional treatment. Consequently, many patients may be involved in quackery, but see no need to discuss it with their doctors whose advice they are also following.

We have a dilemma, then: Is our perception that quackery has declined accurate, or has quackery simply become a successful covert operation? There is surprisingly little hard evidence available to settle this issue. One excellent recent study[1] concluded that 54% of cancer patients on conventional therapies also used unorthodox treatments, that 40% of patients abandoned conventional therapy after adopting quackery, and that 60% of individual ''unorthodox practitioners'' were physicians. If these conclusions are accurate, we do not know that they would be equally true in Minnesota. In fact, we actually can say very little with confidence about the true state of affairs of the current quackery scene in Minnesota. As a first step toward correcting this, the Minnesota Division of the American Cancer Society is currently mailing a brief questionnaire to all Minnesota physicians. While we do not presume to be doing a scientific study of the problem, we hope this will provide information and insights. The questionnaire is rigorously designed to protect patient confidentiality and sensitivity, and to minimize the time involvement of physicians. I would strongly urge each Minnesota physician to cooperate with this effort. In return we will share whatever information is obtained with the expectation that a better understanding of the quackery problem will be an asset in patient care.

Irving Lerner, M.D.
Chairman, Unproven Methods Committee
Minnesota Division, Inc.
American Cancer Society

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Drug Profiles

Acetaminophen Overdose

DOUGLAS BORYS, R.Ph. C.P.I.S.*

SINCE ITS INTRODUCTION in the United States in 1955 Acetaminophen (N-Acetyl-para-amino-phenol) has proved to be a very effective analgesic and antipyretic agent. In therapeutic doses it is a safe drug, relatively free of side effects. However, in the overdosed patient acetaminophen (APAP) may produce hepatic necrosis. Left untreated approximately 1% of all acute APAP overdoses result in fatal hepatic disfunction. In Twin City metropolitan area hospitals, APAP was reported as one of the drugs most used for suicide attempts in 1983, third only to alcohol (in combination) and aspirin.

Pharmacokinetics

APAP is rapidly and nearly completely absorbed from the gastrointestinal tract, reaching peak plasma levels in 10 to 80 minutes. It is rapidly absorbed and uniformly distributed into most body tissues with approximately 25% bound to plasma proteins. APAP has a plasma half life of 1.25 to 3 hours.

Metabolism

APAP is metabolized in the liver by sulfation, glucuronidation and the P450 Mixed Function Oxidase system. After a therapeutic dose, 94% of the drug is metabolized to its sulfate and glucuronide metabolites. The P450 system converts a fractional amount of the administered dose to a reactive metabolite. This small amount of reactive metabolite is normally detoxified by conjugation with cellular glutathione and then excreted in the urine as non-toxic cysteine and mercaptic acid metabolites.

Mechanism of Toxicity

In overdose the glutathione stores are rapidly depleted leaving the reactive metabolite to covalently bond with hepatocellular proteins resulting in hepatic necrosis.

Symptoms

The clinical presentation of APAP overdose normally progresses in three stages. In the initial stage (12-24 hours post ingestion) the patient may develop nausea, vomiting, anorexia, diarrhea and right sided abdominal pain. In many cases the patient will present asymptomatic. In stage 2 (24-48 hours post ingestion) the patient may show clinical improvement, but at the same time hepatic toxicity begins to manifest itself, as evidenced by elevated SGOT, SGPT, bilirubin and alkaline phosphates levels. Death occurs in stage 3 (48-72 hours post ingestion) as peak hepatotoxicity is seen, characterized by fulminant hepatic failure.

Treatment

Initial treatment of APAP overdose consists of general supportive measures. If the ingestion is recent, gastric emptying should be performed with syrup of ipecac or gastrio lavage. Activated charcoal accompanied by a cathartic is contraindicated because of the possibility of binding the oral antidote. In the event of a multiple drug overdose it should be administered but then must be lavaged out of the stomach before the antidote is given.

If the patient has ingested an acute dose of APAP of 150mg/kg or greater or if the ingested amount cannot be adequately determined, a plasma APAP concentration should be obtained as soon as possible but no sooner than four hours post-ingestion. If the APAP is taken on a chronic basis, or a time of ingestion cannot be determined, two successive levels should be performed and a half-life determined. When the APAP level is above the line of possible hepatic toxicity on the Rumack-Matthew Nomagram (150mcg/ml or greater at 4 hours) or if the half life is greater than 4 hours, N-acetyl cysteine (NAC) therapy should be initiated.

NAC is a mucolytic agent, for inhalation, available from Mead Johnson as Mucomyst. The current recommendation in the United States is for oral administration of NAC. The oral NAC regimen consists of a 140mg/kg loading dose followed by maintenance doses of 70mg/kg every 4 hours for 17 doses (72 hours). If any dose is vomited within one hour of administration, it should be repeated. In the case where the patient is suffering from protracted vomiting, either from the APAP overdose or ipecac, and is unable to hold down the NAC after normal measures (i.e. antiemetic, nasogastric tube, etc.) NAC can be administered I.V. This is not an approved use of NAC, nor is there a sterile dosage form available in the United States. However, NAC administered IV is now the treatment of choice for APAP overdose in Europe. NAC therapy should be started as soon as possible after ingestion (within 16 hours). If a toxic ingestion is suspected and the serum level is delayed, treatment should be initiated until a plasma APAP level is attained. Treatment may be discontinued if the (APAP) level returns below a toxic level. LFT's should be determined every 24 hours to evaluate ongoing hepatic damage.

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*Hennepin Poison Center, Hennepin County Medical Center, Minneapolis.

Recently in the literature, Cimetidine has been postulated as a treatment for APAP overdose. It is theorized that Cimetidine acts by inhibiting the oxidative pathways of metabolism and therefore reduces production of the toxic metabolite. There have been no good controlled studies to thoroughly examine this hypothesis, and therefore its use must be considered experimental only.

Hemodialysis, forced diuresis and hemoperfusion are all of no value in preventing hepatoxicity.

In conclusion, all Acetaminophen overdoses should be viewed with caution because of the lack of initial symptoms and the potential for severe hepatic damage. In the event of any APAP overdose the local Poison Center may be contacted. They will be available to explain where an APAP level may be run, help interpret the results of lab tests and consult on any past or future developments in therapy.

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Minneapolis Heart Institute

8th Annual Update
Practical Cardiology

The 8th Annual Update in Practical Cardiology will be presented by the Minneapolis Heart Institute on April 19 and 20, 1985, on the campus of Abbott Northwestern Hospital in Minneapolis, Minnesota.

Program: The Failing Heart with guest faculty: Dr. Karl T. Weber — expert in congestive heart failure from Michael Reese Hospital, Chicago, Ill. Dr. William DeVries — surgeon for the artificial heart, Humana Heart Institute International, Louisville, Ky. Dr. Jack Copeland — Cardiovascular transplant surgeon, Arizona Health Sciences Center.

Contact: Cheri Galbraith, R.N., Minneapolis Heart Institute, Suite 700, 2545 Chicago Avenue South, Minneapolis, Minnesota 55404, 612/872-3975.

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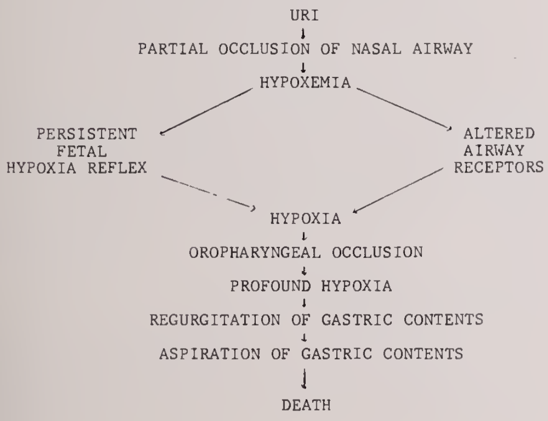
Respiratory Infection as a Trigger for Sudden Infant Death Syndrome

RALPH A. FRANCIOSI, M.D.*

Approximately fifty-percent of SIDS infants have a URI at the time of death. Autopsy examination has not uncovered a lethal lesion to explain the hypoxic death. The hypothesis presented explains the mode of death as hypoxia initiated by partial airway obstruction. The lethal "lesion" is interference with neural receptors in the airway secondary to inflammation. These deaths apparently are acute and usually occur in males with a URI who are twelve weeks or older. Clinical investigation of this SIDS subgroup should uncover preventable deaths.

SUDDEN INFANT DEATH SYNDROME (SIDS) is the sudden death of an infant, frequently less than six months old, who dies during sleep with no apparent serious clinical illness and in whom the autopsy examination reveals an unexplained hypoxic death.[1] Epidemiologic studies have reported that ninety-percent of the infants are less than six months old and ninety-nine-percent are asleep.[2,3] Froggatt et al.[4] in a scholarly report noted that the age and sleep characteristics of SIDS are so specific that any plausible theory must explain them. Their conclusion stated: "The characteristic age range is the most important factor, and there seems little doubt that these infants die because, while passing through this period of increased physiologic vulnerability, some critical combination of intrinsic and extrinsic factors proves lethal. What is in doubt is the mechanism or final common pathway of death . . . any orthodox interpretation of our results must ascribe some role to infection, namely respiratory infection." This paper will offer a hypothesis to explain the mode of death in SIDS infants with an upper respiratory infection.

TABLE 1. LETHAL HYPOXIA FROM URI


URI
PARTIAL OCCLUSION OF NASAL AIRWAY
HYPOXEMIA
PERSISTENT FETAL HYPOXIA REFLEX
ALTERED AIRWAY RECEPTORS
HYPOXIA
OROPHARYNGEAL OCCLUSION
PROFOUND HYPOXIA
REGURGITATION OF GASTRIC CONTENTS
ASPIRATION OF GASTRIC CONTENTS
DEATH

The structure and volume of the infant's nasal passages differ from the older child.[5] They are smaller and the soft palate is opposed to the epiglottis allowing direct airflow into the larynx. The volume of the pharynx is gradually reduced during early infancy by enlargement of adenoidal tissue and tonsils. During REM sleep the skeletal muscles of the tongue and pharynx are hypotonic and further compromise the pharynx.[6] The mouth is poorly suited for air intake because of a relatively large posteriorly situated tongue.

The fetus has discontinuous breathing movements with regularity varying with gestational age.[7,8] The fetus responds to hypoxemia with cessation of breathing.[7] This response does not usually persist beyond the first week of extrauterine life. The mature hypoxia response is to increase the rate and depth of breathing in response to hypoxemia. However the regulation of breathing, particularly during sleep, depends on a complex integrated system of sensory inputs, brainstem respiratory centers and motor outputs.[9] A vital part of this system is airway receptors whose afferent fibers course through the vagus nerve to the medulla.[10]

Tonkin[11] proposed that upper airway obstruction at the level of the oropharynx caused SIDS. She reasoned that sleeping infants are obligate nose breathers and any interference with nasal airflow would result in lethal hypoxia. Since many SIDS infants died during upper airway infection the partial occlusion resulting in hypoxia could be caused by

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mucosal edema, excess secretions and hypertrophy of adenoidal tissue. The results of hypoxemia would be a triggering of the brainstem respiratory centers to increase the rate and depth of breathing. Diaphragmatic contraction would result causing increased intrathoracic negative pressure as the lungs attempted to expand. A vacuum would be created in the oropharynx causing the tongue and pharyngeal wall to be pulled inward, further occluding the upper airway. The occlusion of the oropharynx would make airflow through the mouth ineffective. The vacuum could also result in regurgitation and aspiration through an open glottis.

Williams[12] reported a subgroup of SIDS infants with microscopic tracheobronchitis. These infants were usually older than twelve weeks and died during a URI. He suggested that this subgroup of SIDS should be studied to determine the mode of death. We confirmed Williams' report that a subgroup of SIDS could be identified by significant microscopic inflammation of the larynx, trachea and bronchi.[13] The inflammatory lesions were not sufficient to cause death since they were neither associated with narrowing of the airway e.g. mucosal edema, purulent exudate, nor pneumonia. The lesions occurred in infants who had URIs at the time of death (87%), males (73%), and twelve weeks or older (67%).

I propose that the mode of death in SIDS infants with URIs is an extension of the Tonkin theory. This theory assumed that the SIDS infant was neurologically intact. Is it possible that these infants were abnormal and had a persistent fetal response to hypoxia? Is it possible that inflammatory lesions of the airway alter neural receptors? Either of these conditions could result in lethal hypoxia initiated by partial upper airway obstruction, as illustrated in Table 1. Our study and the study of Williams implicate altered airway receptors secondary to mucosal inflammation. Epidemiologically this subgroup of SIDS is predominantly males, with a URI, who are twelve weeks or older. The possibility that these infants also have a persistent fetal response to hypoxia cannot be excluded.

Research studies of SIDS infants have been focused on epidemiology and histology. Epidemiological reports have clearly shown that SIDS is age and sleep related.[2-4] Morphologic findings have indicated, that as a group, SIDS infants differ from infants dying of explained causes.[14] The correlation between these lesions and the mode of death is uncertain. The interpretation that SIDS deaths are the result of chronic hypoxia is open to question.[15]

SIDS research has expanded to include clinical investigation of infants known to be at "high risk". Two groups of infants are undergoing clinical investigation, i.e. "near miss SIDS" and subsequent siblings.[16] This paper proposes an acute mode of death in a subgroup of SIDS infants with a URI. The clinical investigation of these infants may uncover preventable SIDS deaths.

Summary

A hypothesis is presented to explain the mode of death in infants with a URI. The initiating event during sleep is hypoxemia secondary to partial nasal obstruction. A delayed response by central respiratory control systems results in profound hypoxia. The delayed response is secondary to inflammatory lesions within the airway affecting neural receptors. A terminal event is oropharyngeal occlusion and aspiration as postulated by Tonkin.[11] Hopefully investigation of SIDS infants with a URI can uncover preventable deaths.

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MMIE Malpractice Claim Review

Family Practice

MMIE Risk Management Committee
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Allegations

Negligence and lack of informed consent in performing ear canal irrigation.

Facts of Case

The patient, a 65-year-old female with a documented history of previous ear infections, consulted Dr. X on August 11, 1982, because of a cold and earache. She stated she was flying to California and was concerned because her ears were plugged. An examination revealed fluid behind the eardrums and a considerable amount of wax in the right ear canal. A diagnosis of serous otitis was made.

As is Dr. X's usual and customary procedure, he asked his nurse to irrigate the patient's ear canal to remove the wax. During the procedure the patient noted a sudden onset of pain in the ear, thus the procedure was stopped and Dr. X summoned. Dr. X finished the irrigation and a large amount of wax was removed. Dr. X is not sure whether or not he checked the patient's eardrum following the irrigation, and the records lack any documentation of such an exam. On the way home the patient's ear began to drain and some bleeding was noted. A subsequent examination revealed a perforation of the anterior portion of the eardrum. Despite several surgical procedures to repair the perforation, the patient was left with a 41 percent loss of hearing in the ear.

Disposition: $12,770 settlement.

Reasons for Settlement

1. The records failed to reflect that the patient was advised of the possible risks and complications associated with the procedure prior to the time the procedure was performed.
2. Although perforations are a known risk of the procedure, most are felt to occur in situations where the procedure should have been avoided. Given the patient's history of previous ear problems, it was the defense expert's opinion that the procedure itself may have been contraindicated. In turn,once the patient began experiencing pain during the procedure, the procedure should have been discontinued.
3. Although it is impossible to say whether the irrigation directly caused the perforation, the temporal association is highly suggestive. Since the condition of the eardrum after the procedure was not documented, the defense expert was unable to counter the allegation that the irrigation directly caused the perforation.

Risk Management Comment

1. The Minnesota Supreme Court has held that a physician has a duty to disclose to the patient the significant risks associated with a particular procedure and the alternative treatments available. Failure to document this type of a discussion in the medical records can create a credibility issue and lead to settlement or adverse adjudication of an otherwise defensible case.
2. Well-documented medical records should include not only a description of the patient's condition prior to the procedure but also a complete assessment of the patient following the treatment. The latter should include any sign of complication or lack thereof.

1985 MMA Annual Meeting to be Held at the St. Paul Radisson

The Board approved a site change for the MMA Annual Meeting to be held May 8-10, 1985. MMA will meet at the St. Paul Radisson instead of the Radisson South in Bloomington.

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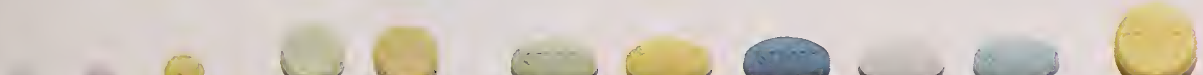

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See following page for brief summary of prescribing information.

SORBITRATE

(ISOSORBIDE DINITRATE)

Please consult full prescribing information before use. A summary follows:

INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris. All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg, below 90 mmHg). Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur. Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers. In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known. However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use.

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates.

Isosorbide dinitrate acts directly on vascular smooth muscle; therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women. SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus

Nursing Mothers: It is not known whether this drug is excreted in human milk Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related. In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose. Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg; for chewable tablets, 5 mg; for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure.

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours. Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined. *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg), Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg); Sustained Action Tablets (40 mg).

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History

The Edwin Smith Papyrus from Ancient Egypt
The World's First Surgical Treatise

RAYMOND C. BONNABEAU, M.D.[*]

THE EDWIN SMITH Papyrus, named after the person it was sold to, came to light in Egypt on January 20, 1862. In 1906, upon Smith's death, one of his daughters gave it to the New York Historical Society, where it is today.

Smith, an interesting individual, was born in 1822, in the United States, and studied Egyptian hieroglyphics in London as well as Paris, at a time when the study of Egyptology was just emerging. He moved to Egypt in 1858, and lived in Luxor for the next 20 years. It was during this time that he acquired the papyrus that came to bear his name.

In 1920, James Breasted, of the Oriental Institute in Chicago, was approached and asked to translate the document then reposing with the New York Historical Society. He became intrigued with the work, and accomplished the overall project in 1930, some ten years later.

Our overall knowledge of the medicine of ancient Egypt, excluding the Edwin Smith Papyrus, comes from other papyrus manuscripts that have survived from these early times.

The earliest manuscript available written on papyrus was found in the ruins of Kahun. This consists of two fragments written in the XII Dynasty, c. 1900 B.C. The first fragment is a treatise on veterinary medicine, (not unusual in a country that considered many animals sacred and embalmed them like humans), while the second, consisting of three pages, deals with the diseases of women.

A second larger and more important source is the Ebers Papyrus, dating from the XVIII Dynasty, c. 1550 B.C. This work, five times as long as the Edwin Smith Papyrus, is a compendium of monographs. Magical in most of its content, it contains primarily medical problems.

The Hearst Papyrus, c. 1550, B.C., and the Berlin Papyrus, produced in the XIX Dynasty, (c. 1250 B.C.), along with the London Papyrus (c. 1400 B.C.) are essentially magical in their medical approach.

Another much later manuscript which is a monograph, the Chester Beatty Papyrus (c. 1200 B.C.), consists of a fragment dealing with "Remedies for Diseases of the Anus."

Of all these existent manuscripts, only the to be described Smith Papyrus and portions of the Ebers Papyrus have recourse to what we would consider actual examination and diagnosis.

Human disease, then, was treated primarily by the ancient Egyptians as spirit intrusion. Consequently, almost all remedies were related directly to spells and incantations. The concept of disease in these manuscripts, and presumably in the Egypt of the time, was similar to that of Mesopotamia, although the spirits of the former were in general considered friendlier than those of the latter.

The *original* Edwin Smith papyrus was probably written between the years 3000 and 2500 B.C. by an unknown surgeon. By the year 2500 B.C., a second commentary was added by another physician. This was apparently necessary because a lot of the language in it had become archaic, and was no longer understandable. The copy of the Edwin Smith papyrus that exists today was then later recopied by a scribe about the year 1700 B.C.

The papyrus itself when unrolled is 15 feet, 3½ inches long, with a width of approximately 13 inches. The papyrus consists of 21½ columns of writing. Seventeen of these columns, or 377 lines, are on the front (recto), and 4½ columns, or 92 lines, are on the back (verso). The material on the verso is entirely different from the front portion of the manuscript, being primarily magical. The front of the manuscript, with its 377 lines comprises one of the most remarkable medical historical documents in existence, for the following reasons:

1. It is primarily a surgical text, and, therefore, the oldest so far discovered.
2. It is probably of military origin, since it deals exclusively with traumatic wounds of the body.
3. *Actual* case histories, (48 in number), are presented, as opposed to the other manuscripts, which deal with magical recipes.
4. It is anatomically consistent; that is, it starts with wounds to the head, and progresses in an orderly manner downward.
5. The treatment recorded is pragmatic. Only one case of magic is recorded in the entire series of 48 cases. The reason for this is obvious: Magic

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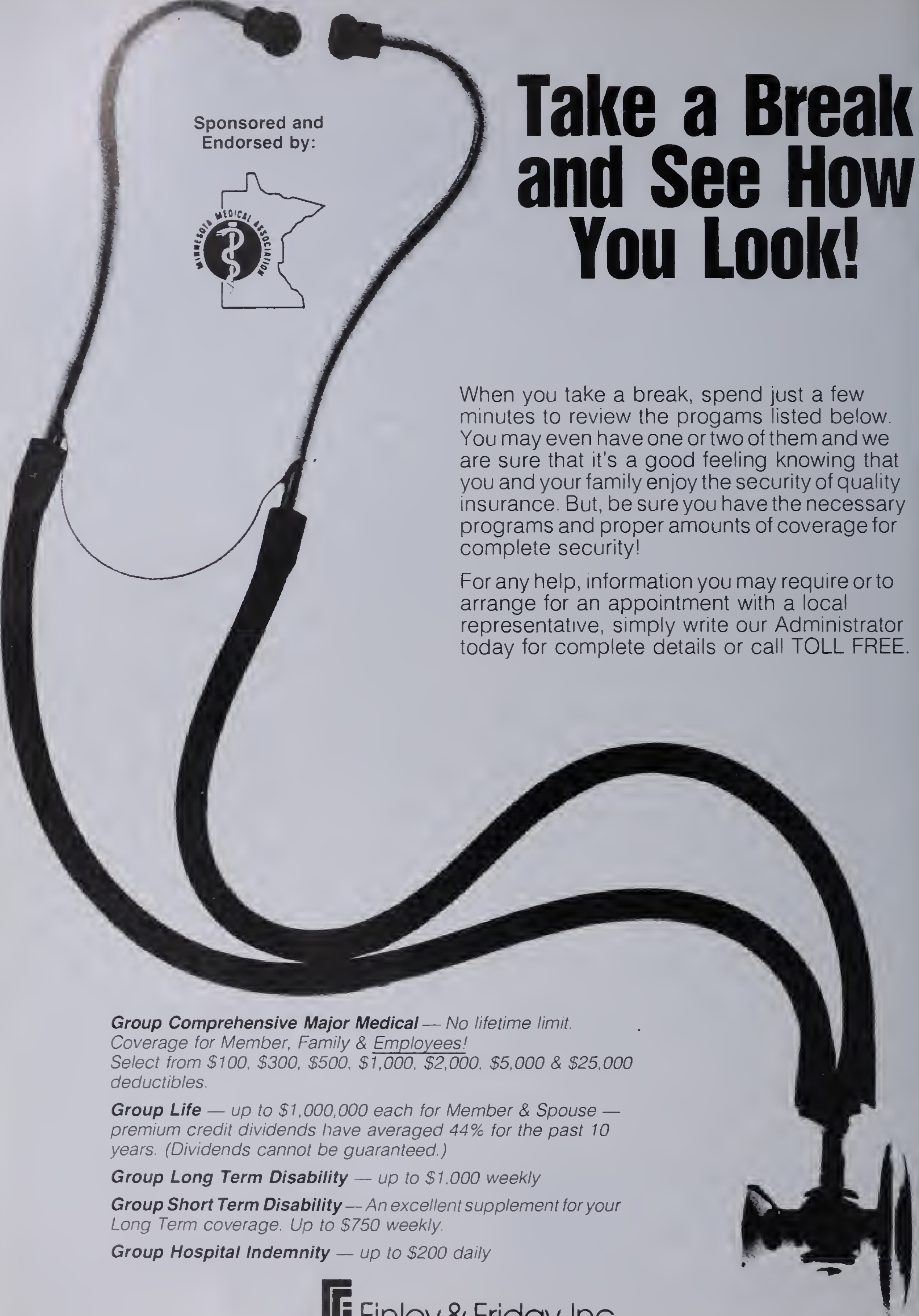
[*] Department of Surgery, Bethesda Lutheran Medical Center, St. Paul, Minnesota, and University of Minnesota Health Sciences Center, Minneapolis, Minnesota



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6. The cases, treated in an orderly manner, are classified into three categories: those treatable with cure, those treatable with hopeful cure, and those untreatable because death is sure to ensue. This is essentially the modern military surgical principle of "triage." While this idea is thought to be a modern one, as we can see, it is not.
7. The examination and especially the follow-up of patients not expected to survive seems to indicate that science was followed for its own sake.

The papyrus, with its 48 cases, is carefully arranged in the following manner:

1. The head: 27 cases
2. The throat and neck: six cases
3. The clavicle: two cases
4. The humerus: three cases
5. The sternum and overlying soft tissue and ribs: eight cases
6. The shoulder: one case
7. The spinal column: one incomplete case

Twelve cases were considered flesh wounds, while 33 were injuries to the bones and articulations, and three others were either tumors, abscesses, or an infected ulcer.

The discussion of each one of these cases is carried out in a very systematic manner throughout the entire treatise, and arranged in the following manner:

1. *Title.* The word "instructions," followed by the injury, together with the anatomy of the wounded area was elucidated along with any further information that could be culled at that time.
2. *The Examination.* A recital of observed symptoms was next listed. It is interesting that in many of the observations the symptoms and findings appear as if two different examinations had taken place. This would occur when the surgeon had seen varieties of the same wound, but presumably at separate times. These observations were included under one case as multiple but different examinations. In the 48 cases, four had two examinations each, one had three, and one had five separate examinations, with separately stated follow-up treatments. An example of multiple examinations occurs in Case No. 34, which consists of a dislocation of the clavicle. The first examination stated, "If thou examinest a man having a dislocation in his two collar bones, shouldst thou find his two shoulders turned over and the heads of the two collar bones turned towards his face ..." Another examination for a clavicle dislocation in the same case went as follows: "If, however, thou shouldst find his two collar bones having a rupture of the tissue over it, penetrating to the interior ..."
3. *The Diagnosis.* The surgeon, then, in all of the 48 cases goes on to this third section. This starts with the words, "Thou should say concerning him ..." this statement is then followed by one of three conclusions; either that (1) an injury will be treated because it is curable, (2) and injury will be treated because it is possibly curable, and (3) the lesion is untreatable because survival is not possible.

   It is interesting that Breasted, in his introduction to this translation, makes the comment that he does not consider this a "prognosis." I don't agree with him. It certainly, as Breasted mentions, is a statement of the course of action the surgeon will be involved in, but a prognosis is automatically conveyed by putting an individual in any one of these classifications. An example of "triage," this classification bears a close resemblance to the categories of wounded in the present NATO handbook on the management of severe war wounds. Thus, the category that the Egyptian surgeon 5,000 years ago would not treat, today would receive what is called in modern NATO terms "expectant" care.
4. *The Treatment.* All cases were not treated by the surgeon following his "triage." In 58 examinations, he omits treatment in 16. These treatments are either exclusively surgical, a combination of surgical and the external use of medicaments, or the exclusive use of external medicaments.

   Examples of medicaments used for wound treatment consisted in approximating the edges of a wound with adhesive plaster, the use of stitches, and the binding of fresh meat with a mixture of honey and lint over a wound. Following a fracture, there was the use of splints following reduction of the broken parts. The splints usually consisted of stiff linen rolls, or wood padded with linen. It is interesting that with a compound, comminuted fracture of the skull, there was a warning against binding the head, along with the maintenance of the patient in the sitting position held by bricks. I think it is of significance that this position is still employed with patients with cerebral injuries or following brain operations to reduce the degree of cerebral edema.

It should be noted that a very common surgical dressing employed was honey, grease, and lint. Lint no doubt did a good job of absorbing drainage, while the grease probably acted like Telfa to prevent the dressing from sticking. Honey, however, had a truly modern role. It has been shown to chemically produce two weak antibiotics, along with hydrogen peroxide, so that it possesses bactericidal activity which can hamper infection.

Cauterization of the wound is also mentioned in Case 39. In this case, a drill used for kindling fire was used.

5. *The Glosses.* This part of the treatise contains an explanation of archaic medical terms. The commentary provides, in a sense, a dictionary, and, as noted earlier, was written much later than the original treatise and earlier than the present copy of the papyrus.

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INDICATIONS AND USAGE: These preparations are indicated for the treatment of infections caused by susceptible strains of designated microorganisms as follows: Respiratory Tract Infections (e.g., tonsillitis, pharyngitis, and lobar pneumonia) due to *S. pneumoniae* (formerly *D. pneumoniae*) and group A beta-hemolytic streptococci [penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever; Velosef (Cephradine, Squibb) is generally effective in the eradication of streptococci from the nasopharynx; substantial data establishing the efficacy of Velosef in the subsequent prevention of rheumatic fever are not available at present]; Otitis Media due to group A beta-hemolytic streptococci, *H. influenzae*, staphylococci, and *S. pneumoniae*; Skin and Skin Structures Infections due to staphylococci and beta-hemolytic streptococci; Urinary Tract Infections, including prostatitis, due to *E. coli*, *P. mirabilis*, *Klebsiella* species, and enterococci (*S. faecalis*).

Note: Culture and susceptibility tests should be initiated prior to and during therapy.

CONTRAINDICATIONS: In patients with known hypersensitivity to the cephalosporin group of antibiotics.

WARNINGS: *Use cephalosporin derivatives with great caution in penicillin-sensitive patients since there is clinical and laboratory evidence of partial cross-allergenicity of the two groups of antibiotics; there are instances of reactions to both drug classes (including anaphylaxis after parenteral use).* In persons who have demonstrated some form of allergy, particularly to drugs, use antibiotics, including cephradine, cautiously and only when absolutely necessary.

Pseudomembranous colitis has been reported with the use of cephalosporins (and other broad spectrum antibiotics); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with antibiotic use. Treatment with broad spectrum antibiotics alters normal flora of the colon and may permit overgrowth of clostridia. Studies indicate a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind the toxin *in vitro*. Mild cases of colitis may respond to drug discontinuance alone. Manage moderate to severe cases with fluid, electrolyte and protein supplementation as indicated. Oral vancomycin is the treatment of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile* when the colitis is severe or is not relieved by drug discontinuance; consider other causes of colitis.

PRECAUTIONS: General: Follow patients carefully to detect any side effects or unusual manifestations of drug idiosyncrasy. If a hypersensitivity reaction occurs, discontinue the drug and treat the patient with the usual agents, e.g., pressor amines, antihistamines, or corticosteroids. Administer cephradine with caution in the presence of markedly impaired renal function. In patients with known or suspected renal impairment, make careful clinical observation and appropriate laboratory studies prior to and during therapy as cephradine accumulates in the serum and tissues. See package insert for information on treatment of patients with impaired renal function. Prescribe cephradine with caution in individuals with a history of gastrointestinal disease, particularly colitis. Prolonged use of antibiotics may promote the overgrowth of nonsusceptible organisms. Take appropriate measures should superinfection occur during therapy. Indicated surgical procedures should be performed in conjunction with antibiotic therapy.

Information for Patients: Caution diabetic patients that false results may occur with urine glucose tests (see PRECAUTIONS, Drug/Laboratory Test Interactions). Advise the patient to comply with the full course of therapy even if he begins to feel better and to take a missed dose as soon as possible. Tell the patient he may take this medication with food or milk since G.I. upset may be a factor in compliance with the dosage regimen. The patient should report current use of any medicines and should be cautioned not to take other medications unless the physician knows and approves of their use (see PRECAUTIONS, Drug Interactions).

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Drug Interactions: When administered concurrently, the following drugs may interact with cephalosporins:

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Role of the CO_2 Laser in the Management of Localized Carcinoma of the Oral Cavity

Emphasis on Second Primary Malignancies

GEORGE L. ADAMS, M.D.* and MATTHEW S. GRIEBIE, M.D.†

The CO_2 laser was used in 12 previously irradiated or operated patients with oral or oropharyngeal squamous cell carcinoma. It was effective in eradicating small second primary carcinomas of the anterior floor of the mouth.

CARCINOMA OF THE ORAL cavity and oropharynx accounts for approximately 22,000 new cases of cancer per year in the United States. It represents a spectrum of disease ranging from a solitary carcinoma *in situ* to large infiltrating tumors with nodal metastasis. The primary modalities of treatment have been surgical excision and radiation therapy or a combination thereof. This paper will primarily discuss surgical resection and the role of the CO_2 laser for treating limited lesions which failed conventional treatment.

Our interest in oral carcinoma and new modalities of treatment was created by the recently encountered high incidence of second primary oral malignancies. A recent national study has demonstrated a 4% per year incidence of second primary malignancies in patients with previous malignancies of the upper aerodigestive tract.[1] Recognizing that many patients will survive five years, this allows for a 20% incidence of second primary malignancies. In our experience, several of these second primary malignancies have occurred in the oral cavity. These patients have already sustained significant deprivation of their normal mechanisms for speaking and swallowing. A method of treatment that would not further compromise these functions was sought. The CO_2 laser seemed a reasonable alternative. Another group of patients in whom an additional method of treatment was sought were patients not felt to be candidates for extensive surgical resections. Examples include elderly patients and those who had already received maximum therapeutic irradiation.

To achieve a satisfactory surgical cure requires complete removal of the primary tumor with minimal morbidity. The control of the neck disease is a separate issue and may require radical neck dissection and/or post-operative irradiation. Local resection is considered only in the management of accessible T_1 and T_2 tumors (1-3.5 cm), but occasionally larger tumors are "debulked" prior to radiation or chemotherapy. Transoral techniques, to be effective, must not interfere with the administration of additional or adjunctive therapy. If the margins are inadequate, it

TABLE

TNM Classification

Primary Tumor (T)

T_X	Tumor that cannot be assessed by rules
T_0	No evidence of primary tumor
T_{IS}	Carcinoma in situ
T_1	Tumor 2 cm or less in greatest diameter
T_2	Tumor more than 2 cm but not more than 4 cm in greatest diameter
T_3	Tumor more than 4 cm in greatest diameter
T_4	Massive tumor more than 4 cm in diameter with deep invasion to involve antrum, pterygoid muscles, base of tongue, or skin of neck

Nodal involvement (N)

N_x	Nodes cannot be assessed
N_0	No clinically positive node
N_1	Single clinically positive homolateral node 3 cm or less in diameter
N_2	Single clinically positive homolateral node more than 3 cm but not more than 6 cm in diameter or multiple clinically positive homolateral nodes, none more than 6 cm in diameter
N_{2a}	Single clinically positive homolateral node more than 3 cm but not more than 6 cm in diameter
N_3	Massive homolateral node(s), bilateral nodes, or contralateral node(s)
N_{3a}	Clinically positive homolateral Node(s), one more than 6 cm in diameter
N_{3b}	Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N_{3b}: right, N_{2a}: left, N_1)
N_{3c}	Contralateral clinically positive node(s) only

*Manual for Staging of Cancer 1978. American Joint Committee for Cancer Staging and End-Results Reporting.

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should be possible to proceed without delay to further therapy such as "pull through" dissection, composite surgery, or radiation therapy.

For a new method of treatment to be considered, it must not further jeoparadize the patient by camouflaging or burying persistent cancer. It should not interfere with the ability to perform radical surgical ablation if deemed necessary. Use of the CO_2 laser for benign disease and published reports using it to treat cancer suggested that CO_2 laser resection would fit these criteria. It is useful to review the current surgical modalities from which a physician can choose for the management of early oral carcinoma. These techniques of resection include: sharp dissection, electrosurgery, cryosurgery, and the CO_2 laser.

Techniques for Resection

1. Sharp dissection with scalpel or scissors has been the standard modality. One problem with this technique is that this site must be closed primarily or covered with a split-thickness skin graft, which may obscure an early recurrence. There is also considerable morbidity when a lesion of greater than 2 cm is excised.

2. Electrosurgery, using the high frequency diathermy cutting current, is another popular method. Bleeding can be kept to a minimum so dissection can be carried out in an orderly fashion. A disadvantage is the postoperative swelling, which may necessitate a temporary tracheostomy. Also, the wounds are usually left open and allowed to heal by secondary intention, which may produce scar contracture. There is reported moderate to severe discomfort for the patient immediately post-operatively. Finally it is difficult to provide a specimen free of deep heat coagulation at the margins.

3. Cryosurgery has been used as a method of tissue destruction for attempted palliation of advanced or recurrent tumors, as well as for the primary control of T_1 tumors (0-2 cm). Cryosurgery, when monitored by a thermocouple to ensure freezing of the entire area to $-20°$ C., allows a predictable method for tissue destruction. One disadvantage of this technique is that there is no specimen for histologic evaluation of the adequacy of tumor-free margins. Another disadvantage is post-operative edema, which may necessitate a tracheostomy. The healing phase can be prolonged, as it occurs by secondary intention after the separation of a slough two to three weeks post-freeze. If the tumor is not entirely eradicated, cryosurgery is not an effective method of palliation.[3]

4. The CO_2 laser produces tissue destruction by cell vaporization. Intracellular water is boiled and the cells rupture, releasing cellular particles into the beam. These particles are burnt in the beam and are deposited as charred debris around the laser wound. It has been shown that there are no viable cells or cellular debris within the laser vapor, and there is no increased tendency for lymphatic or hematological spread of tumors.[4]

There are several advantages to laser surgery. First, there is immediate tissue destruction, which presents an obvious advantage over cryosurgery. Secondly, there is a relatively bloodless operative field, as vessels up to 0.5 mm are sealed by the beam. In addition, lymphatic vessels and nerve endings are also sealed, contributing to the lack of post-operative pain.[4] Another advantage is the precision that is affordable with the laser. It can be used in conjunction with the operating microscope, which provides a well illuminated, magnified operative field. The position of the beam and the progress of the dissection can be clearly followed visually, with adjustments in wattage or duration made as necessary. Because no instruments are needed to deliver the beam to the tissues, the view of the operative field is uninterrupted. The smoke evacuator keeps the field visible.

Figure — Silk traction sutures separate the wound as the laser beam excises around the tumor.

Laser excision of tumors can be performed directly over the mandible. Exposed areas of bone will heal satisfactorily with migration of mucosa over the site.

The major benefit of the laser is the minimal damage to normal tissue. Cell vaporization takes place at the relatively low temperature of 100 degrees Centigrade, and as tissues conduct heat poorly, there is an extremely thin layer between totally destroyed and totally normal tissues. This minimal damage to residual normal tissues means minimal postoperative edema and subsequently healing is rapid and remarkably free of pain.

Accessibility of the lesion is probably the most important factor. Specifically, in the anterior floor of the mouth it is easier to judge the third dimension or the depth of the tumor. The depth becomes difficult to assess in the buccal region and even more difficult in the tonsillar fossa and the base of the tongue.

Experience Using the CO_2 Laser

In the time period between June, 1979 and June, 1984, 12 patients with biopsy-proven invasive carcinomas have been treated with transoral laser resection at the University of Minnesota Hospitals. There were nine males and three females; the age of the patients varied from 54 to 79 with an average of 65.3 years. Follow-up on patients ranged from four months to five years, with an average follow-up of 18 months. All had a past history of alcohol and/or tobacco abuse.

Selection of Patients

The initial patients treated by this means have had either previous radiation or surgery or both and had a failure at the site of the primary. Others had a second primary malignancy of the oral cavity after having had a previous radiation or composite resection for other oral pharyngeal carcinomas. Originally this treatment was not utilized for any patients with a lesion that had not failed more conventional treatment such as radiation therapy or surgical excision. The initial patients that were poor surgical risks had all the therapeutic radiation therapy that was feasible, or would require a second debilitating operative procedure for a resection of a second primary malignancy.

Case Reports

Case 1

The first patient was a 72-year-old female who originally presented with a T_1N_0 right tonsillar lesion which was treated with radiation therapy. Three years later she presented with a T_1N_0 lesion on the floor of the mouth which was excised with the laser. There is no sign of recurrence, two years post-operatively.

Case 2

The patient was a 65-year-old male who originally presented with a T_2N_0 left anterior mobile tongue, at which time he required resection of the anterior floor of the mouth and repair with a pectoralis major myocutaneous flap. The patient developed a secondary primary, a T_1N_0 lesion in the right tonsillar pillar. This was excised by the laser, but biopsy two months later showed recurrent or residual tumor, and the patient underwent a right composite resection.

Case 3

The patient was a 65-year-old male who was status-post laryngectomy and right composite for two separate primaries; he presented with a lesion at the base of the tongue and inferior tonsil. He underwent laser excision, was lost to follow-up, and subsequently died. No autopsy reports were available.

Case 4

A 59-year-old male presented with two synchronous primaries, a T_1N_0 lesion in the floor of the mouth, and a $T_2N_0M_0$ squamous cell carcinoma of the left lateral tongue. Because of the patient's general health, it was elected to perform laser excision. This was followed by post-operative radiation therapy. The patient had no sign of recurrence at six months.

Case 5

An 82-year-old woman initially had a T_3N_0 lesion of the right anterior tongue. She originally had external beam and implant irradiation. The tumor persisted and she required a right hemiglossectomy transorally with the laser. The patient has been free of disease in a five-year follow-up.

Case 6

The patient was a 54-year old male who had a T_3N_0 superficial squamous call carcinoma of the left buccal mucosa. He underwent a wide laser excision. The wound healed with mucosal covering. Three months later there was unimpeded evidence of persistent tumor at the margins. The patient received full course radiation therapy followed by resection of the lesion and left radical neck dissection for a high cervical node that developed during radiation. Another recurrence in the left neck developed five months later and was resected with the overlying skin and partial mandibulectomy. There is no sign of recurrence 20 months later.

Case 7

The patient was a 62-year-old man who had undergone a left composite resection in 1977 for a carcinoma of the soft palate and tonsil. The patient developed a second primary at the left base of the tongue, for which he received resection in September, 1983. The patient was noted seven months later to have a T_1N_0 lesion of the right retromolar trigone and for this he received laser excision. The patient also developed a synchronous small primary of the thoracic esophagus, for which he received external radiation. Five-month follow-up showed no recurrence in the pharynx.

Case 8

The patient was a 60-year-old male, status-post laryngectomy and post-operative irradiation for a T_4N_0 carcinoma of the larynx. Eighteen months later he developed a second primary, T_1N_0, of the left anterior tongue, for which he received laser excision. There has been no evidence of recurrence, four months post-operatively.

Case 9

The patient was a 65-year-old male who initially presented with a $T_2N_0M_0$ lesion of the left retromolar trigone, for which he received radiation therapy.One year later, he then developed a T_1N_0 lesion of the left anterior tongue, which was treated by hemiglossectomy. Three years later he developed a recurrence at this site, and received a laser excision of this. The patient subsequently developed a fourth primary of his esophagus four years later, from which he developed metastatic disease and died. There was no evidence of recurrence in the tongue.

Case 10

The patient was a 58-year old male who had multiple recurrent carcinomas, the first being a T_1N_0 of the left true vocal cord which was treated by radiation. He then developed a T_1N_0 of the soft palate 14 years later, treated again by radiation therapy. Six months later he developed a third primary T_1 N_0 of the right lateral pharyngeal wall and base of tongue, for which he received laser excision. The patient developed neck disease four months post-operatively, and a right radical neck dissection was attempted, at which time it was found to be inoperable because of invasion of the carotid artery. He subsequently died of his disease.

Case 11

The patient, a 69-year-old male, presented with a T_2N_0 lesion of the base of the tongue, for which he received pre-operative radiation, followed by a laryngectomy, partial pharyngectomy, and resection of the base of the tongue. He developed a recurrence eight months post-operatively and was treated for a T_1-T_2 lesion of the right base of the tongue. This was incompletely excised due to inaccessibility. The patient was begun on chemotherapy for salvage, failed follow-up after this, and shortly died of residual tumor.

Case 12

The patient was a 65-year-old blind female who presented with a T_3N_0 squamous cell carcinoma of the right maxillary alveolar ridge in 1978. She underwent partial maxillectomy and resection of the upper lip for this. One year later, she developed a recurrence, and was treated with re-excision and post-operative irradiation. Another year later she again had recurrence and underwent further re-excision. The patient also had a lobectomy for an adenocarcinoma of the lung at this time. Another year later, she was again noted to have recurrence of the palatal tumor and she underwent laser excision twice over the course of the following year, with further radiation therapy. Eventually, control of the alveolar ridge/maxillary sinus cancer was obtained. The patient developed what was felt to be another primary carcinoma of the lung, and was not a candidate for surgical resection. It could not be established whether this was a metastasis or a third primary.

Results

Ten of the twelve patients in this series had developed multiple sites of carcinoma of the upper aerodigestive tract. This can be further subdivided into the seven patients who developed a second or third primary lesion, one of whom had two synchronous primaries, and the three patients who had recurrence or residual of their original lesion. The patients could be grouped into those having lesions located anteriorly (floor of the mouth, tongue, and cheek) and those having more posterior lesions, namely at the base of the tongue and in the area of the retromolar trigone. There were seven patients who had an anterior lesion. Two of these patients developed a recurrence or had a residual tumor. There were five patients who had a posterior lesion. Three recurrences were noted in this latter group, and included three of the five deaths.

Discussion

The review reports our initial experience with this procedure. The numbers are small, so statistical significance cannot be assigned, but it is obvious that the more anterior lesions fare better. This is most likely because of the accessibility of the lesion and ability to appreciate its depth by bimanual palpation. This depth-factor or third dimension becomes more difficult to determine in the buccal region and in the area of the tonsillar fossa/base of the tongue. Laser excision can be performed directly over the mandible. Exposed areas of bone heal eventually with migration of mucosa over the exposed site.

A large number of these patients had more than one primary carcinoma. This further supports the theory of field cancerization in this type of patient, emphasized in a larger study where 23% of patients with oral cancers went on to develop further lesions of the upper aerodigestive tract.[2] Here again, laser therapy can offer an advantage if the local disease can be controlled by simple excision. Radiation or more extensive surgical procedures can be reserved for larger lesions, should they arise. Another advantage is that laser-treated wounds tend to heal rapidly. If there is persistent ulceration in the site of the excision after four to six weeks, rebiopsy is essential to determine if there is residual tumor. A positive biopsy requires more aggressive therapy be undertaken. Finally, the lessened morbidity associated with the laser can shorten hospital stays and hospital costs considerably. Tracheostomy has not been necessary, and the majority of patients were discharged home the following day after 24-hour post-operative observation.

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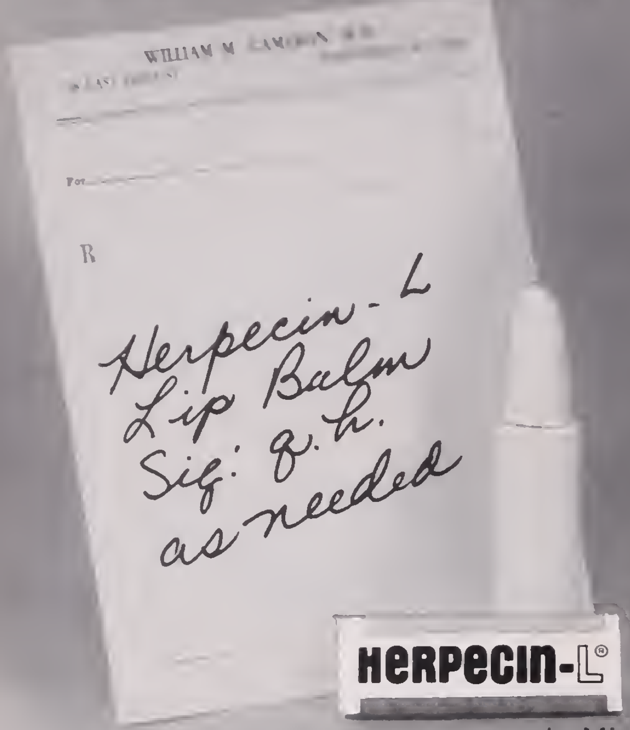

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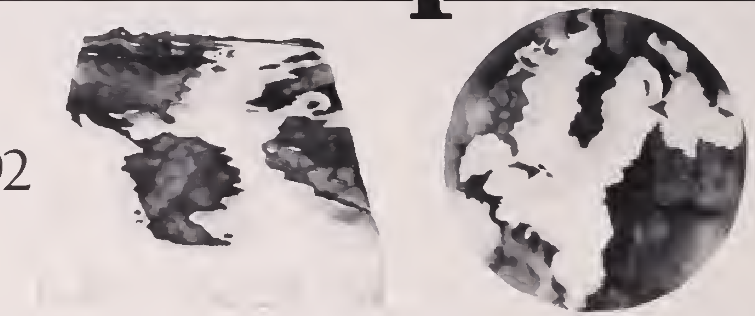

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Factors Favoring Certain Complications of Acute Myocardial Infarction

Rupture, Aneurysm and False Aneurysm of Left Ventricle

HISAYOSHI NAKAJIMA, M.D.* and JESSE E. EDWARDS, M.D.*

Fifty eight hearts with rupture of the ventricular free wall without aneurysm formation (Group I, average age 72.7), 52 hearts with true ventricular aneurysm (Group II, average age 63.5) and 12 hearts with false aneurysm (Group III, average age 68.5) complicating acute myocardial infarction were studied. There were 30 men and 28 women in Group I, 42 men and ten women in Group II and seven men and five women in Group III. All of the patients in Group I died during the acute phase, with rupture and acute cardiac tamponade. In Group II 13 patients (25 per cent) died during the acute phase of myocardial infarction while a true aneurysm was developing. Seven of these 13 patients exhibited rupture of a developing true aneurysm, but in none of the remaining 39 patients in Group II, each with chronic true aneurysm, did rupture of the aneurysm occur. Two of 12 patients in Group III died during the acute phase, and one of these two showed rupture of the false aneurysm; three of the remaining ten patients in Group III had rupture of the false aneurysm in the chronic phase. Group I had various sites of myocardial infarction, but 70 per cent of Group II had anterior myocardial infarction, and none of this group had lateral infarction. Thirty three per cent of Group I, 52 per cent of Group II and 42 per cent of Group III had significant triple vessel obstructive coronary arterial disease.

IN THE CARDIOVASCULAR REGISTRY of United Hospitals, St. Paul, during the period 1969-1983, there were added, as complications of coronary atherosclerosis and myocardial infarction, 58 specimens of heart with ruptured free wall without aneurysm formation, 52 specimens of heart with true ventricular aneurysm and 12 with false ventricular aneurysm. The specimens were derived from many different institutions, principally in Minnesota.

For the pathologic aspect of the study, both the pathologic data and the specimens were examined.

In general, myocardial rupture complicating acute myocardial infarction shows marked intensity of necrosis at the terminal end of the blood supply, laceration of cardiac muscle and hemorrhage through the lacerated wall resulting in hemopericardium with acute cardiac tamponade.

Ventricular true aneurysm involves a protrusion of a localized portion of the external aspect of the left ventricle beyond the remainder of the cardiac surface. The wall of the aneurysm is thin in comparison with the rest of the left ventricle. Aneurysm formation presumably occurs when intraventricular tension stretches the noncontracting infarcted heart muscle. True aneurysm contains some myocardial elements in its walls.

False aneurysm of the heart occurs when a rupture of the left ventricle is followed by containment of the resulting hematoma. The basic wall of a false aneurysm is organized hematoma and lacks any elements of the original myocardial wall. The pericardium, even the visceral layer, may contribute to the wall.

Results

The 122 specimens were divided into three groups, as follow: *Group I:* This consisted of 58 specimens (30 men and 28 women) with rupture of the left ventricular free wall without aneurysm formation. *Group II:* In this group there are 52 specimens (42 men and ten women) with true ventricular aneurysm. *Group III:* In this group there are 12 specimens (seven men and five women) with false aneurysm formation. As shown in Table 1, the range of age in Group I was 56 to 91 years (average, 72.7); in Group II, 35 to 82

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*Departments of Pathology, United Hospitals, St. Paul, and the University of Minnesota, Minneapolis.

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years (average, 63.5); and in Group III, 57 to 84 years (average, 68.5). In Group I, the average age of the patients was almost ten years greater than that of Group II. Table 2 shows the age distribution of Groups I, II and III by decade. Fifty nine per cent of the patients in Group I were 70 years of age or older, but only 35 percent of Group II were 70 years old or older. By the same token, only 7 per cent were less than 60 years old in Group I, and in this group none were less than 50 years of age. In Group II, 30 percent were younger than 60 years of age, and 13 percent were younger than 50 years of age. The seventh decade had the highest number and percentage in both Groups I and II, and before the seventh decade aneurysm formation was more common than rupture. In the age groups of the eighth decade and older, free wall rupture was more common than aneurysm. Although in Group III the number of cases was small, the seventh decade had the highest percentage of cases.

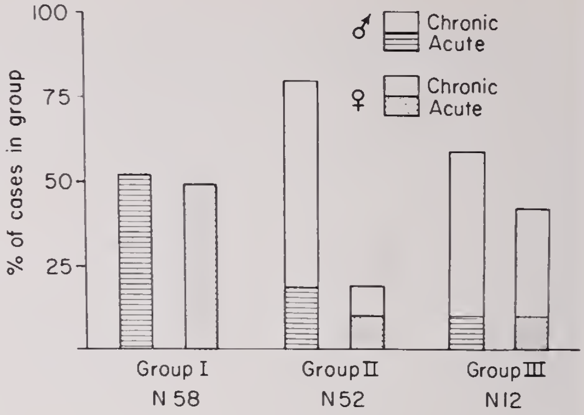

Fig. 1 — Distribution by gender in each of the three groups studied. Acute refers to the fact that the myocardial infarct was acute at the time of death; chronic refers to the state of either the true or false aneurysm. In no cases of Group I (rupture of the heart complicating acute infarction) was the underlying infarct chronic.

Regarding time of death relative to the state of the underlying acute myocardial infarction (Figure 1), all the patients in Group I died with rupture during the acute phase of myocardial infarction, usually within a week of the time of the onset of the underlying myocardial infarction. In Group II, 39 of 52 patients (75 per cent) with true aneurysm died months or years after the occurrence of the underlying myocardial infarction. Death resulted from various causes, but in none of the cases with chronic true aneurysm did rupture of the aneurysm occur. The remaining 13 (25 per cent) of the patients in Group II died several weeks after the onset of infarction but while the underlying myocardial infarct was still acute; death occurred while a true aneurysm was developing. Seven of these 13 patients exhibited rupture of a developing true aneurysm. Among the 12 patients with false aneurysm (Group III), two died while the underlying infarct was acute, one of these from rupture of the false aneurysm. In the remaining ten patients with false aneurysm the latter condition was chronic, and in three of these rupture of the chronic false aneurysm occurred.

Figure 2 shows the relationship between age and gender in Groups I and II. In our material, myocardial rupture (Group I) in men was about evenly represented among subjects in the seventh to ninth decades, while among women the greatest numbers were in the seventh decade. Among subjects with true aneurysm

TABLE 1

Number of Patients, Range in Age and Average Age in the Three Groups Studied

	Number of Patients	Age (Years) Range	Average
Group I:free wall rupture	58	56-91	72.7
Group II:true aneurysm	52	35-82	63.5
Group III:false aneurysm	12	57-84	68.5

TABLE 2

Distribution by Age (Decades) of Patients in Each of the Three Groups Studied. Figures in ( ) Represent the Per Cent of Cases in the Age given of All the Cases in the Major Group

	Number of cases	Less than 50	50-59	Age (years) 60-69	70-79	80-89	Over 90
Group I	58	0 (0)	4 (7)	20 (34)	19 (33)	14 (24)	1 (2)
Group II	52	7 (13)	9 (17)	18 (35)	15 (29)	3 (6)	0 (0)
Group III	12	0 (0)	2 (17)	5 (41)	3 (25)	2 (17)	0 (0)

( ) = percentage.

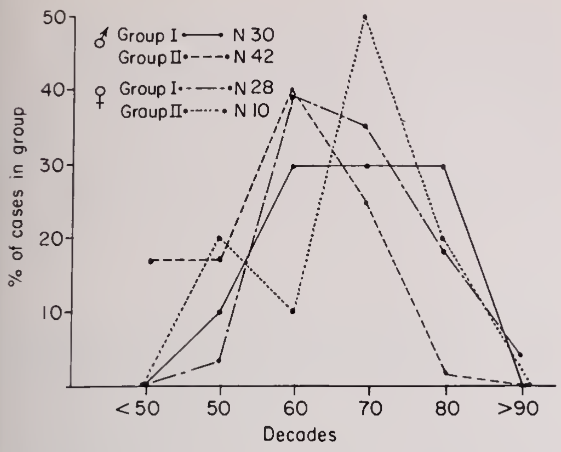

Fig. 2 — Distribution by decade of patients in Groups I and II by gender.

(Group II), in men the seventh decade was the most common, and in women the eighth decade was most commonly represented. In five of the ten women with true aneurysm, the underlying myocardial infarction was still in the acute phase at the time of death, and in three of these the aneurysm had ruptured. Among the 42 men with true aneurysm, the underlying infarct was acute in eight. In four of these, rupture of the aneurysm occurred.

In Group III there were 12 cases, of which seven were men and five women. Among these, the underlying infarct was acute in two (one man; one woman). Rupture of a false aneurysm occurred in one of the cases, while the underlying infarct was acute, and in three instances rupture of a chronic false aneurysm was observed.

The sites of underlying myocardial infarcts were classified according to published definition.[1] Based on that classification, the underlying sites of acute myocardial infarction in Group I were anterior or anterolateral (39 per cent), lateral (19 per cent) and inferior and inferolateral (42 per cent) (Table 3).

In Group II there were no cases of lateral infarction, while anterior or anterolateral infarcts were observed in 87 per cent of the cases, and inferior and inferolateral infarcts underlay 13 per cent of the true aneurysms.

In the cases of false aneurysm (Group III) no cases of anterior or anterolateral infarction were represented, while lateral infarction was present in 25 per cent, and inferior or inferolateral were present in 75 percent of the cases.

In Group II, when the site of underlying myocardial infarction for aneurysm formation was considered, there was no significant difference between men and women. In contrast, regarding free wall rupture, among men inferior or inferolateral infarctions underlay more than half of the cases, while among women anterior or anterolateral infarctions were the most common site for myocardial infarction underlying rupture of the free wall.

TABLE 3

Sites of Underlying Myocardial Infarction from which the Various Complications Represented by Groups I, II and III Occurred.

		Anterior or Anterolateral	Lateral	Inferior or Inferolateral
Group I	**All**	39	19	42
	Men	23	23	54
	Women	58	14	28
Group II	**All**	87	0	13
	Men	86	0	14
	Women	90	0	10
Group III	**All**	0	25	75
	Men	0	14	86
	Women	0	40	60

TABLE 4

Distribution of Single, Double and Tri-vessel Significant Coronary Atherosclerosis among the Three Groups Studied

	Single	Double	Triple
Group I	18 (31)	21 (36)	19 (33)
Group II*	6 (12)	18 (34)	27 (52)
Group III	3 (25)	4 (33)	5 (42)

---

*In one case no vessel showed 75 percent reduction in cross sectional area. ( ) = percentage

Coronary Arterial Stenosis

The numbers of cases with trivessel disease of the coronary arteries in each group is shown in Table 4. In this table, we considered that reduction in the cross sectional area of 75 per cent or more of a coronary artery was significant disease. In Group I, only 33 per cent (19 of 58 patients) had three vessel disease, while in Group II 52 per cent (27 of 52 patients) had significant three vessel disease, and Group III had a medium percentage of 42. The severity of coronary stenosis between men and women in each group showed an almost equal distribution.

Comment

In this study we compared some features of rupture of the heart and formation of true and false aneurysm among patients with a background of acute transmural myocardial infarction. It was the purpose of this study to establish profiles for or against the relative frequency of development of one or another of these complications of acute myocardial infarction.

In comparing ages between the groups, it is essential to emphasize that this was a study on autopsied cases. Patients with rupture of the free wall usually die within a few days after the onset of the underlying myocardial infarct within a very short time after the onset of the rupture, so that the age at death conforms closely with the time of rupture and of the underlying infarct.

In contrast, among patients who develop true or false aneurysm, survival for months or years is common. Therefore, listing the age at death of subjects with true or false aneurysm has a built-in factor of listing of greater age than that at the time at which the aneurysm had formed.

Regarding age among subjects with rupture of the ventricular free wall or true ventricular aneurysm, our studies were within the ranges mentioned in earlier reports.[2-9] The average age at death among cases with rupture of the free wall was 72.7 years. Among these, no difference between men and women was evident, in that the average age for men was 72.5 years (range, 56-80), and for women 73.0 years (range, 56-91).

Among all subjects with true aneurysm the average age at death was 63.4 years (range, 35-82), while for men the average age was 61.7 years (range 35-80) and for women 70.8 years (range, 59-82).

The ages for individuals with false aneurysm was between the values found in subjects with rupture of the non-aneurysmal free wall, the average being 68.5 years (range, 57-84), for men an average of 65.9 years (range 57-84) and for women an average of 72.2 years (range, 65-80).

The differences in age at death between rupture of the free wall and aneurysm formation observed in this study conform in general to the observations of Bates and coworkers.[10] The latter authors reviewed many reports and found that rupture is seldom seen before the sixth decade. Others[5-8] found that ventricular aneurysm is not rare before that decade. In our series, there were no cases of rupture, and there were seven cases of aneurysm before the sixth decade.

There are apparent striking differences between men and women regarding the tendencies for rupture as opposed to formation of aneurysms. In our series, among subjects with rupture of the left ventricular free wall, men and women were about equally represented (30:28). Accepting that acute myocardial infarction is more common in men than in women, the near equality in number of cases of rupture between the two genders suggests a stronger tendency for rupture to occur in women with acute transmural infarction than in men. Among our 52 cases of true ventricular aneurysm there were 42 men and ten women. The difference suggests a stronger inherent tendency for men to form ventricular aneurysm than for women to do so.

The results of our study do not readily explain why one person with acute transmural myocardial infarction develops the complication of rupture of the heart, another a ventricular aneurysm, and a third, neither.

Our findings regarding the state of the coronary arteries may serve as some basis for answers as provided by the following considerations: In our study only 33 per cent of the patients in Group I had trivessel disease; on the other hand, 52 per cent of the patients in Group II had trivessel disease. Since in Group I coronary atherosclerosis was relatively less extensive than in Group II, coronary collateral circulation may have been less well developed in Group I. London and London[4] reported that myocardial rupture rarely occurs in an area of excellent collateral circulation, and Schuster and Bulkley[2] also stated that patients with rupture generally had poor collaterals. Wessler and coworkers[11] summarized in their report the generally accepted circumstance thought necessary for cardiac rupture, namely that of an acute coronary occlusion resulting in a fresh transmural infarction with poor collateral circulation and absence of fibrosis. Some observations in our study tend to be contradictory. In our study, there was no difference in severity of coronary arterial disease between men and women. Thus, degrees of coronary arterial disease do not seem to have any effect upon the difference in incidence of the several complications studied.

Regarding the question of site of infarction having an influence on possible complications, it is reported by some that anterior myocardial infarction is the site most commonly serving as the underlying lesion for rupture of the heart[12-16] and for aneurysm.[7,17] As to the question of rupture of the heart, our observations are different from the claims in the cited reports. In our series, the anterior and anterolateral together contributed to only 39 per cent of the cases of rupture.

In the area of true aneurysm, our findings conform to those of others, in that of our true aneurysms 85 percent complicated either anterior or anterolateral infarction.

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Minnesota Gerontological Society

The Minnesota Gerontological Society will present its Spring Conference "Healthy Choices in Aging" on April 29-30, 1985 at the Thunderbird Motel in Bloomington. The conference will examine problems and choices related to a healthy old age. It will provide an integrated perspective on aging through body, mind and spirit. Featured keynote speaker will be Bonnie Genevay, MSW of Seattle.

For further information, contact: Carol J. Bishop, MGS Program Chair, 2524 Broadway Avenue, Slayton, MN 56172. (507) 836-8549.

References

Epidemiology of Post-Traumatic Encephalopathy in Boxers (page 300).

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1985: Children Still Can't Fly

TIMOTHY J. CRIMMINS, M.D.* and GARY C. FIFIELD, M.D., M.P.H.*

Accidents remain the leading cause of pediatric mortality and morbidity after one year of age. Over a seven week period, this hospital admitted six children, ages 18 months to 3½ years, for falls from second or third story windows. Two suffered severe head injuries. All occurred within a ½ mile radius of each other. These accidents have been demonstrated to be preventable and appropriate public health and patient education measures need to be implemented in the Metropolitan Area.

ACTUARIES TELL us that 121 toddlers (ages one to four) will die next year from falls.[1]. Many of these accidents are preventable. The problem of children falling from windows has been studied by the New York City Public Health Department,[2,3] and a program to prevent childhood morbidity and mortality was devised entitled "Children Can't Fly."[4] The program of public health nursing follow-up, community education, media coverage, and installation of window guards significantly lowered mortality within one year. We feel a similar program may be appropriate for the Minneapolis area.

Methods

All patients were admitted to Hennepin County Medical Center from 7-22-83 to 9-12-83 and studied retrospectively for age, sex, location and circumstances surrounding the fall. All patients fell from a second or third story window or balcony.

Results

Two patients had skull or facial fractures, and had prolonged hospital courses. Four were discharged after overnight observation. Brief case histories follow:

Case 1 is a two-year old white female who climbed onto a second floor balcony unattended and fell to the wet ground below. She was admitted for observation, but had no sequelae.

Case 2 is an 18-month old American Indian male who fell from a third story window to concrete below. He suffered facial fractures and required intubation, ventilation and paralysis for closed head injury. He spent 10 days in the Intensive Care Unit but was discharged neurologically intact after three weeks.

Case 3 is an 18-month old Hmong female who fell from a second story window, was admitted, observed, and discharged without sequelae.

Case 4 is a three and a half-year-old White female who fell to concrete from a second story downtown hotel window. The child suffered a depresssed skull fracture and was intubated, ventilated, and required an intracranial pressure monitor. She spent four days in the ICU and was discharged neurologically intact after an 11-day hospital stay.

Case 5 is a two and a half-year old Hmong female who fell backward off a sofa through an open window to bushes below. The child was observed overnight and was discharged without sequelae.

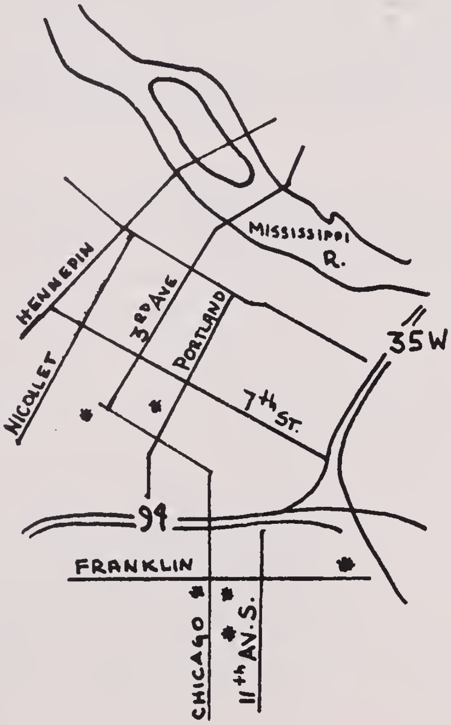

Figure 1. Location of Falls

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*Departments of Emergency Medicine and Pediatrics, Hennepin County Medical Center, Minneapolis, Minnesota.

Case 6 is an 18-month old American Indian male who fell from a second story window, also suffered no injury, but was admitted and observed overnight.

The total cost of these hospitalizations was over $27,000.00. All patients were on AFDC.

The geographic area is demonstrated in the Figure.

Discussion

One hundred twenty three children died in New York City from 1965-1969 from falls from windows, twenty three occurred in the South Bronx alone in 1971. As a result, the New York City Department of Health in 1972 developed a program "Children Can't Fly." The success was impressive — a 50% reduction in falls,and a 35% reduction in deaths in two years. The program had four components: (1) Reporting of falls by Emergency Departments with follow-up counseling and data collection by public health nurses. (2) A media campaign to elevate public awareness. (3) Community Education for prevention involving schools, civic groups and health care providers. (4) Availability to the public of free, easily installed window guards to families at risk.

The program resulted in legislative amendment to the New York City Health code requiring owners of multiple resident dwellings to provide window guards in apartments where children 10 years old and younger reside.

Children still can't fly. Even though none of the toddlers in our series suffered death or permanent injury, the potential for serious sequelae is evident. The financial cost is staggering considering how preventable these accidents are.

We feel a similar program should be instituted in the Metropolitan area, with some modification.

1. Establishing and enforcing building codes. The State of Minnesota has no laws requiring window guards or screens on windows of apartments where children reside. We feel legislative action is required at the state level to insure windows are protected in multiple family dwellings.

The city building inspector's office has been notified, and enforcement of city codes has been urged. The city does mandate screens be on windows of buildings up to 50 feet above ground.

2. The Public Health Nursing Department has been alerted to the problem and are encouraged to report noncompliance of building codes and counsel parents in appropriate supervision of toddlers.

3. The local newspaper and television stations have been contacted in order to enlist their aid in educating the public.

4. We would encourage physicians and other health care providers to include in well child visits a discussion with parents of the danger of unprotected windows.

We feel that childhood skydiving should come to an end in Minnesota. We think that with institution of simple public health measures we can prevent tragic loss of life and serious injury.

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Cover Photo

"Morning Dew"

Dr. Robert Volkmann, a family practitioner at the Grove Square Urgent Care Center, took the cover photo early in the morning at his father's farm in Wadena. He is a graduate of the University of Minnesota Medical School, interning at the Hennepin County Medical Center. He is interested in preventive medicine and wellness.

Dr. Volkmann is single and enjoys photography and hiking.

He used a Nikon FM camera with Kodachrome 64 film.

Epidemiology of Post-Traumatic Encephalopathy in Boxers

JAMES A. MORTIMER, Ph.D.*

THE EXISTENCE on some ex-boxers of a characteristic neurologic-psychiatric syndrome is well-established. Since Martland's original description of the punch-drunk state (Martland, 1928), numerous case reports and clinical series have been published of boxers who developed a combination of cerebellar, extrapyramidal and pyramidal motor signs accompanied in some case by intellectual and psychiatric impairments,[1-5,8,9,11,14-16] others summarized in Roberts, 1969[14]. Perhaps the best characterization of this syndrome is given by Roberts (1969), who described a clinical spectrum ranging from dysarthria with and without mild cerebellar and pyramidal signs through disabling ataxias, disequilibrium, spasticity, and extrapyramidal tremors associated with varying degrees of dementia and psychiatric disturbances. While the existence of severe post-traumatic encephalopathy needs to be recognized as a possible result of a boxing career, accurate data on the frequency of prevalence of this condition in ex-boxers are needed to make sound recommendations regarding the realistic risk that boxers face as a result of their participation in this sport.

Prevalence of Neurologic Sequelae in Boxers

Many editorials concerning the hazards of boxing have based their conclusions on evidence from biased samples of boxers who have come to medical attention because of their neurologic or psychiatric conditions. Such samples may of course be expected to display a high incidence of significant neurologic or psychiatric findings. Fortunately, there have been three studies performed in which systematic or random non-biased samples of ex-boxers have been examined and the frequency of neurologic or psychiatric impairments determined.

The largest study of this type was conducted by Roberts (1969)[14], who examined a 1½% random sample of all persons who had boxed professionally in the United Kingdom from 1929-1955 (N = 16, 781). Of the 250 patients identified, 25 were dead or could not be located and only one refused participation. The 224 boxers examined, therefore, were a very representative unbiased sample. These boxers were carefully evaluated with neurologic, psychological, and electroencephalographic tests. Thirty-seven of the 224 boxers (17%) had chronic neurologic sequelae attributable to boxing. Of these 37, 13 (6%) had a post-traumatic encephalopathy consistent with previous descriptions of the ''punch-drunk'' state, whereas 24 had similar symptoms, but were only marginally-disabled. Psychometric testing and clinical observations revealed severe memory impairment in two of the 37 cases (4% of the total sample) and indisputable dementia in two of the 37 cases (less than 1% of the total sample). Roberts[14] found that both age (50 and over) and numbers of bouts were associated with an increased frequency of neurologic sequelae. He pointed out that the older ex-boxers were more likely to have fought more frequently (weekly in many cases) and to have boxed under conditions with poorer supervision. Contrary to the prevailing belief that traumatic encephalopathy occurs in lighter boxers who were second-rate performers, Roberts found that this condition occurred with greater frequency in heavyweights and occurred at least as frequently in boxers who were former champions.

Studies

Jedlinski et al. (1971)[7] studied 60 amateur boxers with a mean age of 28.4 years. This study included all boxers in the Krakow district of Poland who had fought more than 100 bouts. Because participation was a condition for obtaining a sports license, there were no refusals. Thirty-three boxers (55%) demonstrated neurologic signs, although in 18 (30%), these were apparently confined to absent or unequal abdominal reflexes. Pronounced organic symptoms or disease syndromes were reported to have occurred in 21.7%. Severe organic syndromes in the form of dementia, psychosis and characterologic disorders were seen in five boxers (8.4%). Increased frequency of neurologic signs was observed in boxers who had fought more bouts and in boxers who competed in heavyweight categories.

Thomassen et al. (1979)[17] studied 53 former champion amateur boxers (most of whom were in the 40s at the time of the study) and compared them with a control group of 53 former First Division soccer players. Boxers were selected for the study from a roster of participants in regional amateur boxing championships. The refusal rate was relatively low (16%), and the final sample therefore was fairly representative. In this study, no differences were found between the two groups in the frequency or severity of neurologic signs. The authors concluded that amateur boxing is safe, given the existing rules in Denmark.

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Prepared for: Ad Hoc Committee on Boxing, Minnesota Medical Association, Februaru 27, 1985.

These three studies provide the only data on prevalence of post-traumatic neurologic sequelae in randomly- or systematically-selected samples of former boxers. Although it is usually asserted that professional boxing poses a greater risk of neurologic damage than amateur boxing, the study of Jedlinski et al. raises important questions regarding the safety of amateur boxing as it was practiced in Poland in the early 1960s. The sharp contrast between the high reported frequency of neurologic sequelae in the Polish study and the absence of such findings in the Danish study of Thomassen et al.[17] is unlikely to be due to differences in diagnostic sensitivity. A more likely explanation is provided by a comparison of the frequency of bouts. On the average, the Danish boxers had only about half as many bouts as the Polish boxers, despite the fact that both groups boxed for a mean of eight years. This suggests that the frequency of boxing might be an important determinant of later morbidity. Some support for this view is provided by Roberts' observation[4] that professional boxers who fought before the second World War were more likely to fight two or more times per month than post-war boxers and were much more likely to exhibit neurologic signs and post-traumatic encephalopathy.

On the basis of the three prevalence studies, the following conclusions appear justified:

1. Under the most conservative situation where the frequency of bouts is kept low (1 per month or less) and there is a good ring supervision, the incidence of clinically-significant neurological and psychiatric abnormalities is relatively low in ex-boxers in their 40's and 50's.

2. Among professional boxers with a long ring career, about 17% have clinically significant neurologic damage and a smaller percentage (less than 5%) have marked memory impairment or dementia. These percentages clearly exceed those expected for persons of the same age without a boxing history and represent an important long-term risk for boxers. Amateurs who box with a similar frequency appear to run a similar risk of neurologic damage.

3. The degree of damage appears to be related to the number of bouts fought and/or their frequency, suggesting that it results from either the cumulative effects of relatively minor head trauma or from the increased risk of relatively major head trauma that accompanies a long and active ring career.

Subclinical Damage and Its Long-Term Implications

Roberts' study of ex-professional boxers suggests that 83% did not suffer clinically-significant long-term neurologic sequelae.[14] While this finding might be taken as encouraging, it is important to realize that the brain can sustain rather major damage and cell loss without neurologic signs becoming evident. CT studies, for example, show very clear ventricular atrophy in boxers, who do not necessarily manifest neurologic or psychiatric signs (Ross et al., 1983[15]). Neuropathological studies of patients with relatively minor and seemingly inconsequential head trauma have shown that permanent microscopic brain lesions can result from such injuries (Oppenheimer, 1968[13]) without obvious long-term clinical impairment.

Most of the boxers Roberts examined were in their 40s and 50s at the time for the interview, when neuron loss due to aging might be expected to be relatively slight. The consequence of moderate brain damage occurring during a boxing career for neurologic function in the seventh, eighth and ninth decades of life is unknown. If neurologic signs do not become evident until a certain threshold of neuronal loss is reached, it is possible that persons who have experienced brain damage during life might reach that threshold earlier. Results from two recent case-control studies of patients with Alzheimer's disease (Mortimer et al. 1985[12]; Heyman et al., 1984[6]) demonstrate that patients with this disease are about 4-5 times more likely to have had a history of serious head trauma than well-matched control subjects. Although the incidence of Alzheimer's disease in former boxers is unknown, the latter finding suggests that persons subjected to head injury may run additional long-term risks not previously appreciated.

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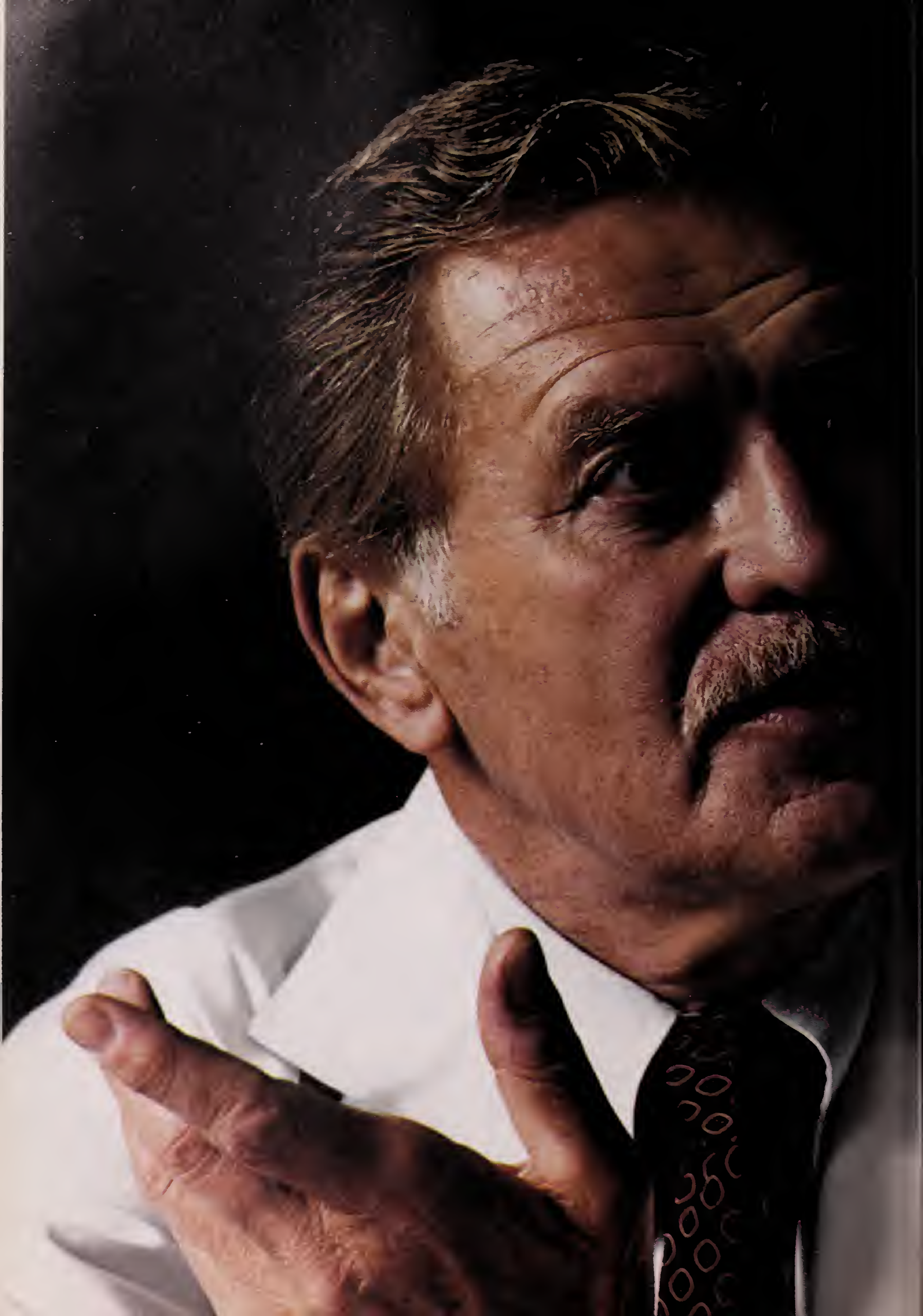
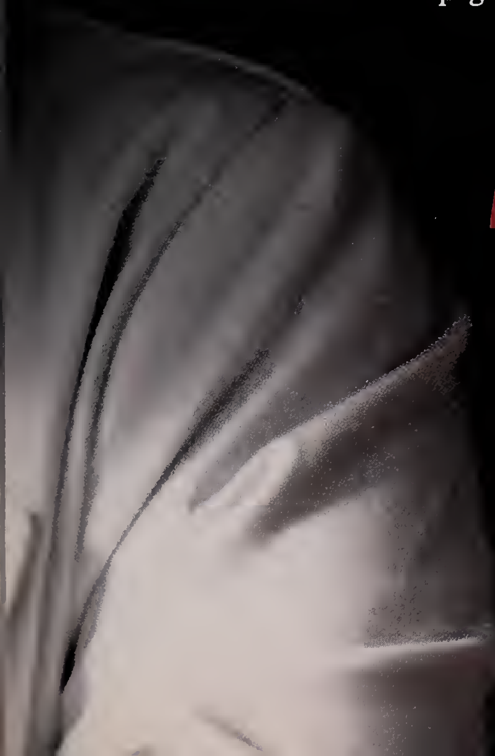




"When it comes to cardiovascular medicine, I like to know exactly what my patients are swallowing."

There are doctors who say that generic drugs have a place in their practice—but not necessarily in the treatment of serious or potentially life-threatening disease. And when they consider that the average patient pays only about 45¢ a day for INDERAL (propranolol HCl) Tablets, there's not much left to discuss.

When it's INDERAL Tablets you want for the treatment of hypertension, angina, arrhythmias, or post-MI patients, make sure you specify "Dispense As Written" (DAW), "Do Not Substitute," or whatever is required in your State. That way, you'll know exactly what your patients will get.

Please see next page for brief summary of prescribing information.

INDERAL® Tablets

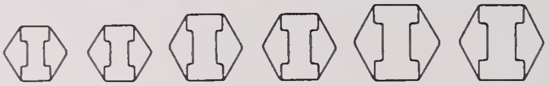
BRAND OF PROPRANOLOL HCl

Small price to pay.

"When it comes to cardiovascular medicine, I like to know exactly what my patients are swallowing."

INDERAL® Tablets

BRAND OF PROPRANOLOL HCl



BRIEF SUMMARY (FOR FULL PRESCRIBING INFORMATION, SEE PACKAGE CIRCULAR)

INDERAL® (propranolol hydrochloride) Tablets

CONTRAINDICATIONS

INDERAL is contraindicated in 1) cardiogenic shock 2) sinus bradycardia and greater than first degree block 3) bronchial asthma 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL

WARNINGS

CARDIAC FAILURE Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure and its inhibition by beta blockade may precipitate more severe failure Although beta blockers should be avoided in overt congestive heart failure if necessary they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics. Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE continued use of beta blockers can, in some cases lead to cardiac failure Therefore at the first sign or symptom of heart failure the patient should be digitalized and/or treated with diuretics and the response observed closely or INDERAL should be discontinued (gradually if possible)

IN PATIENTS WITH ANGINA PECTORIS, there have been reports of exacerbation of angina and in some cases myocardial infarction, following abrupt discontinuance of INDERAL therapy Therefore when discontinuance of INDERAL is planned the dosage should be gradually reduced over at least a few weeks and the patient should be cautioned against interruption or cessation of therapy without the physician's advice If INDERAL therapy is interrupted and exacerbation of angina occurs it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris Since coronary artery disease may be unrecognized it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications.

Nonallergic Bronchospasm (e.g., chronic bronchitis, emphysema) PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors

MAJOR SURGERY The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial It should be noted, however, that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures

INDERAL like other beta blockers is a competitive inhibitor of beta-receptor agonists and its effects can be reversed by administration of such agents, e.g dobutamine or isoproterenol However, such patients may be subject to protracted severe hypotension Difficulty in starting and maintaining the heartbeat has also been reported with beta blockers

DIABETES AND HYPOGLYCEMIA Beta-adrenergic blockade may prevent the appearance of certain premonitory signs and symptoms (pulse rate and pressure changes) of acute hypoglycemia in labile insulin-dependent diabetes In these patients it may be more difficult to adjust the dosage of insulin

THYROTOXICOSIS Beta blockade may mask certain clinical signs of hyperthyroidism Therefore abrupt withdrawal of propranolol may be followed by an exacerbation of symptoms of hyperthyroidism including thyroid storm Propranolol does not distort thyroid function tests

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME several cases have been reported in which after propranolol the tachycardia was replaced by a severe bradycardia requiring a demand pacemaker In one case this resulted after an initial dose of 5 mg propranolol

PRECAUTIONS

General Propranolol should be used with caution in patients with impaired hepatic or renal function INDERAL is not indicated for the treatment of hypertensive emergencies

Beta-adrenoreceptor blockade can cause reduction of intraocular pressure Pat ent should be told that INDERAL (propranolol hydrochloride) may interfere with the glauco screening test Withdrawal may lead to a return of increased intraocular pressure

Clinical Laboratory Tests. Elevated blood urea levels in patients with severe heart dis elevated serum transaminase, alkaline phosphatase lactate dehydrogenase

DRUG INTERACTIONS Patients receiving catecholamine-depleting drugs such as pine should be closely observed if INDERAL is administered The added catecholamin blocking action may produce an excessive reduction of resting sympathetic nervous a which may result in hypotension, marked bradycardia, vertigo syncopal attacks, or or static hypotension

Carcinogenesis Mutagenesis, Impairment of Fertility Long-term studies in animals been conducted to evaluate toxic effects and carcinogenic potential. In 18-month stud both rats and mice employing doses up to 150 mg/kg/day, there was no evidence of s cant drug-induced toxicity There were no drug-related tumorigenic effects at any of the age levels Reproductive studies in animals did not show any impairment of fertility that attributable to the drug

Pregnancy Pregnancy Category C INDERAL has been shown to be embryotoxic in studies at doses about 10 times greater than the maximum recommended human dose

There are no adequate and well-controlled studies in pregnant women. INDERAL sh be used during pregnancy only if the potential benefit justifies the potential risk to the fe

Nursing Mothers: INDERAL is excreted in human milk Caution should be exercised INDERAL is administered to a nursing woman

Pediatric Use Safety and effectiveness in children have not been established

ADVERSE REACTIONS

Most adverse effects have been mild and transient and have rarely required the withdra therapy

Cardiovascular bradycardia, congestive heart failure, intensification of AV block, hy sion; paresthesia of hands, thrombocytopenic purpura, arterial insufficiency, usually of Raynaud type

Central Nervous System Lightheadedness, mental depression manifested by insom lassitude, weakness, fatigue, reversible mental depression progressing to catatonia, v disturbances, hallucinations, an acute reversible syndrome characterized by disorienta for time and place, short-term memory loss, emotional lability, slightly clouded sensoriu and decreased performance on neuropsychometrics

Gastrointestinal nausea, vomiting, epigastric distress, abdominal cramping, diarrhe constipation, mesenteric arterial thrombosis, ischemic colitis.

Allergic pharyngitis and agranulocytosis, erythematous rash, fever combined with a and sore throat laryngospasm and respiratory distress.

Respiratory bronchospasm.

Hematologic agranulocytosis nonthrombocytopenic purpura, thrombocytopenic purpura

Auto-Immune In extremely rare instances, systemic lupus erythematosus has been reported

Miscellaneous alopecia, LE-like reactions, psoriasiform rashes, dry eyes, male impo tence, and Peyronie's disease have been reported rarely Oculomucocutaneous react involving the skin, serous membranes and conjunctivae reported for a beta blocker (pra lol) have not been associated with propranolol

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Letters to the Editor

Where Do We Go From Here?[†]

SEYMOUR HANDLER, M.D.*

UNDERSTANDABLY THESE are unhappy times for physicians. The older physician nearing retirement eagerly anticipates his last day. The physician in his middle years hopes that be can hang on economically. The young physician, particularly one with some exposure to the "good old days," says he would not recommend that his children go into medicine. The practice of medicine, previously a revered and satisfying profession, is rapidly being reduced to a trade in which concerns of quality are supplanted by a "bottom line" economic mentality. Contributing to physician malaise is the rapidity with which these changes are occurring. In this season of our discontent is there anything worthwhile happening from which we and society will eventually benefit? To answer the question, perhaps the "glorious" past should be reviewed more objectively to see if medical practice was as good as we fondly recall.

First, was the relative shortage of physicians up until a decade ago a positive or negative factor from the respective viewpoint of physicians and the public? From the viewpoint of the nihilistic pathologist, to whom most medical activity is abhorrent and frightening, having fewer physicians around to subject the unknowing public to the horrors of medical activism was a blessing. Unfortunately the public has been effectively propagandized by both the media and physicians to believe that most medical care is of value, and that if medical care is worthwhile, more medical care must be even better. From this extrapolation, the inability of many of the public to swiftly gain access to physicians was perceived as a deprivation. I doubt if it really was, but I recognize that my views are not readily shared by either the lay public or many of my clinical colleagues. Besides, because of the efficient behavior and energy of physicians, despite their relative shortage in numbers, they got the job done and the "shortage" may have been more apparent than real.

From the physician's vantage, the doctor shortage was an undisguised blessing. The intrinsic energy of most physicians is succored by an office full of patients willing to wait for his counsel and ministrations. No matter what the level of talent of the busy physician, patients sought his care. A handsome income was the expected outcome of such activity. Although a level of competition and corresponding freedom of choice for patients existed in metropolitan areas where the "shortage" was less evident, almost all physicians (general surgeons excepted) were as busy as they cared to be and the activity level was professionally satisfying. The outpouring of medical school graduates, far in excess of any objective appraisal of need, has increased the physician supply, so that many physicians — at least in metropolitan areas — see too few patients for their comfort. As an unhappy consequence, physicians are retiring early, grouping together into larger practices and getting into "marketing" to attract or retain patients.

The growing surplus of physicians, the result of unwise federal policy, may turn out to be more expensive to the public than would be expected if the laws of supply and demand were operating. Because of the nature of medical care, in which the service contracted for is so subjective and so little understood by the consumer, medical care lends itself to sale because it is easy to market something which is not understood and which relates to individual's health and well-being. Thus, the presence of a surplus of physicians may generate more medical care, and at increased total cost to the public.

So much for the physician shortage. Should the accelerating move from fee-for-service care to prospective pricing or capitation financing be viewed entirely as a professional disaster from the physician's view or are there some positive attributes? Is fee-for-service medicine an unmitigated blessing, good for physicians, patients and society, or are there shortcomings which perhaps have contributed to the accelerating changes to alternative forms of health care financing? If fee-for-service medicine is a mixed bag, with good and not so good attributes, is it possible to preserve the good and dispense with the bad? In order to answer these questions, we should dissect the system and see which parts have merit.

To the economic conservative, fee-for-service medicine appears ideal. What is fairer than for the consumer to pay for each item (or product) which he purchases? If he wants more service, or desires less, he has the freedom to make a choice. In the pure fee-for-service system, with one doctor caring for one patient, nobody else is involved, and a one-on-one relationship constitutes a true open market. Unfortunately, it *ain't* that way and it never was. Illness, or the perception of illness, clouds the concept of a service which the consumer chooses or does not choose because of freedom of choice. In most instances, the patient is not aware if he needs medical care or not; the likely result of such ignorance is to seek care. Many illnesses are of such a catastrophic nature as to preclude any notion of freedom of choice. The decision to go to the doctor is more complicated than the decision to dry clean a suit of clothes or to call the plumber to unclog a drain.

[†] Reprinted from North Memorial Medical Center Medical Staff News by permission.

*North Memorial Medical Center, Minneapolis, Minnesota.

One of the positive attributes of fee-for-service medicine is the built-in incentive to do a good job, to please the patient, to provide compassion and care, in the hope that such exemplary service is appreciated and will lead to a continued professional relationship. This type of incentive, to which most physicians respond, is potentially lacking in health care arrangements where the patient seeks unlimited care and where the physician is on a fixed income or is paid no more no matter how often the patient presents. Many physicians in this latter arrangement provide the same compassionate care as any in fee-for-service; some, unfortunately, do not. On the other hand, some physicians in fee-for-service medicine are no better than the disinterested, clock-watcher in prepaid plans. Admittedly, these subjective factors do not lend themselves to objective analysis. Nevertheless, they are often cited by advocates of one system or the other.

For the sake of argument, fully recognizing the difficulties of measuring the real value of incentives in the fee-for-service system, let us accept the view that incentives have a positive value in encouraging quality care. Are these incentives one side of a double-edged sword? Are the financial rewards for the physician in the fee-for-service system also capable of introducing less desirable results? How much have the incentives contributed to the growth and inflation of health care, which has resulted in our recently introduced retrenchment.

Most authorities believe that the fee-for-service system, retrospectively charging for services already provided, with no incentive to do less, and lots of incentive to do more, has pretty much broken the bank. Even the most diehard conservative must recognize that our economy will not and cannot tolerate health expenditures much more than ten percent of the GNP. If we continued as we have until a few years ago, with no controls or disincentives, providing as much care as physicians and hospitals were inclined to make available, there is little doubt that health care was on a collision course with fiscal realities and that either the health system or the bank had to give. Since the system was construed to be at fault, the bank (Uncle Sam, third-party carriers, etc.) closed the door and we are in the midst of a correction.

Much has been said about the factors which have contributed to the impending fiscal crisis. Some or most of these factors are part of medical progress, medical advances to alleviate pain and suffering and possibly prolong life. The public desires "medical progress" at almost any cost. Unfortunately, so much of what is encompassed by "medical progress" is just bigger and fancier ways of accomplishing simple things, and a great deal of "progress" is expenditure of billions of dollars on unproven and "unnecessary" diagnostic procedures and modes of therapy. If one-third of current hospital care dollars are spent on patients who do not survive one year after that hospitalization, it is difficult to construe outcomes as worth the expenditures. However, we do not always know who will live or die during the succeeding year, the patients (and their families) involved are not interested in theoretical fiscal concepts where their life is concerned, and most important, physicians are probably better off not thinking too much beyond the current illness in their patient when they make medical decisions — within limits, of course.

What is the chief factor behind the excess of medical activity expended on unproven diagnostic and therapeutic activity? The answer is ***ACTION.*** Physicians, the public, the patients, the media — almost everyone except nihilistic pathologists — love action. Doing things is rewarded and applauded; not doing things is viewed with suspicion or criticized. The current flak about the value of adjuvant chemotherapy for stage 2 breast cancer in postmenopausal women and the value of coronary artery bypass surgery in prolonging useful life are possibly the most striking examples of our propensity for action.

When dealing with breast cancer in women, emotion prevails over facts in the desire to prevent recurrence of cancer. Anything remotely suggestive of therapeutic value is readily accepted by patients and the media and the resulting pressure is barely resisted by physicians. When questions are raised about the yield of adjuvant therapy in the postmenopausal group, the therapists attack the patient as being at fault — many of the older women were unable to tolerate the toxic effects of the treatment. It's *their* fault that the cancer returned despite adjuvant therapy, as if the toxicity of the therapy is not a consideration. Even further removed is the small group of therapeutic activists treating stage 1 breast cancer (negative nodes) with adjuvant therapy, even though survival of stage 1 disease exceeds 80 percent and despite the fact that no evidence exists to support the approach. They argue, "Patients want everything possible to prevent recurrence" or "It is not ethical to withhold a possibly useful mode of cancer therapy." Nonsense! I believe it is unethical to subject patients to unproven methods of therapy, particularly when the therapy is expensive, toxic and may cause other malignancies.

The national epidemic of coronary bypass surgery, now a five billion dollar a year industry, illustrates the attractiveness of action. Well over half of the bypass operations performed do not meet accepted indications, yet are performed on an adoring public. Bypasses are presented as preventing heart attacks, prolonging life, curing coronary atherosclerosis, most of which is blatantly unsupported by available evidence. Such is the level of media and medical hype that anyone raising questions about the number of operations performed is personally attacked (fallacy ad hominum) as being unethical.

Coronary artery bypass surgery may be the most flagrant abuse in the fee-for-service system. Who can fight it? In an earlier era, we could depend upon internists to rail against unnecessary surgery. Now, with the collusion of cardiologists and cardiac surgeons, the voices speaking out against the surgery are few and weak. Both the referring physician and the surgeon now have a piece of the action; cardiologists, cardiac surgeons and anesthesiologists divvy up about 10,000 dollars for each procedure. Admittedly, the operation is technically impressive, and for the patient with left main stem disease and truly incapacitating angina, the results are positive. However, for the rest, certainly more than half, the operation does not do what it is purported to do, and the patient would have been just as well off with nonsurgical management.

Unfortunately, the only cure for this national epidemic will be financial restrictions instituted either by government, HMOs, third part insurers, etc. Fee-for-service has not served the public well in this operation. Where the financial incentive to perform bypass surgery does not exist, the number of operations is dramatically reduced.

Finally, and clearly the most reprehensible factor involved, is the role that fee-for-service medicine has in promoting unsavory medical practices. In this, the arrow of indictment must be accurately aimed; most physicians are blameless. Unfortunately, a significant number of physicians are involved in a variety of shady practices and billing procedures which border on fraud. Some culprits operate elaborate diagnostic mills in their offices, removed from the peer review scrutiny of the hospital, where batteries of expensive and unindicated diagnostic procedures are performed and billed to third-party insurers. Since the latter are very tolerant of fringy medical practices and are reluctant to confront physicians on the doctor's turf, most of the bills are paid.

Another abuse of the system — "milking the golden cow" — involves elaborate itemization of surgical procedures, in which a single operation is described as several. Again, the patient is not involved, and the insurance carrier lacks the guts to say "no." A recent innovation in *funny* charging is continued hospital visits (and charging) by referring physicians in situations where the entire care of the patient has been delegated to the consultant. Still another abuse is the practice of setting unreal values to newly introduced diagnostic and therapeutic procedures, in which the charges submitted are higher for the simpler innovation than the more complex procedure supplanted. We have already said enough about expensive remuneration for diagnostic procedures by medical subspecialists.

Is it possible to retain the professional incentives to do a good job for patients which we exalt in the fee-for-service system, or are the unpleasant abuses making it impossible? I don't know the answer and it may well be that the choice will be made for us. Correcting the problem of physician surplus is difficult; pressure to enter medical school remains high; the bureaucracies of medical education and government are generally opposed. Where do these unhappy predictions leave us? Most physicians are flexible and realistic. The unpleasant changes occur gradually and permit adjustment. If the physician can separate the factors over which he has little control — the economic and political factors — from the professional factors which he can influence, he (she) may well make a satisfactory adjustment to the changes and continue to find the practice of medicine as one of the most rewarding ways to earn a living.

Dear Editors:

The Price of Life: Ethics and Economics

The report of the task force ''The Price of Life: Ethics and Economics,'' states (p.32): ''We, as a society, must realize that health care resources are limited, and that the traditional notion that everyone is entitled to any treatment the health care system can provide, regardless of cost, is no longer viable.'' This is not entirely correct, since the 'traditional notion' referred to is certainly less than thirty years old. The real tradition goes back for centuries and consists of health care as a moral obligation fulfilled by the charity hospitals, individuals, religious and other communities in various settings; the quality of care was at least equal to that of private care but the amenities associated with private care were considered a privilege. The coalition suggests returning to the previous two-tier system because of the demands of the economy. It would leave the methods of returning in the hands of the allocators and rationers. An example of this method exists in Australia, where health care was given away and then partially taken back by a bureaucracy with the resulting confusion they have now. If health care here is indeed to be rationed, it would seem logical to let the American public decide just how much they care to expend on health and deal with whatever rationing is needed after that decision is reached. Unfortunately, some of the older system has already been eroded by sale of public hospitals to for-profit chains. (Over 150 to date — New York Times article, Jan. 85); retrieving that system may be costly.

In spite of Mr. Graven's* rebuttal to Dr. Bell's commentary†, the report does indeed seem to condemn aggressive use of technology. It does state, however, (p.28) that ''. . . it is unclear whether the costs of non-invasive techniques outweigh the morbidity, mortality, and additional costs of invasive procedures.'' I have used present technology freely in my own practice and have seen a great deal of savings in just economics, aside from the other factors, in terms of preventing useless procedures or promoting proper ones.

As an example, a great deal of money has been spent developing the percutaneous ultrasonic destruction of kidney stones; much of that money may be wasted because of the advances in technology, but it led to the development of the lithotripser machine which the HSS has approved as being 'cost-effective'. The savings generated by the CT scanner must be immense although I have never seen it well documented. It may well be that advances in technology should be hailed rather than restricted as the report suggests; even the remarks regarding the questionable results of cardiac bypass surgery say nothing about the number of patients put back to work by the procedure, aside from their improved quality of life.

The comment (p.32) that research should be 'targeted' to cost efficient technologies is felt to be unfortunate; the present Administration's restriction of research funds seems to conform to this attitude. There is more than a grain of truth in Murphy's Law that 'all great discoveries are the result of accidents'. An editorial in the New York Times (Jan. 28, 1985) addresses this concept; those of us who have been involved in research have found more to support Murphy than the coalition.

The report states (p.39) that ''. . . recipients of public subsidies . . . should be limited to a range of health plans combining quality care and cost effectiveness. Recipients . . . may be required to choose among capitated plans rather than fee-for-service options.'' The implication is that fee-for-service offers less quality and cost

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*Minnesota Medicine, February, 1985, page 151.
†Minnesota Medicine, February, 1985, page 145.

effectiveness, an assumption that is certainly not proven and may well be the opposite. There is growing evidence that a well run private office may be the most efficient means of delivering health care today.

Strategy B (p.39) suggested by the report to allocate a fixed budget over a given period of time to control costs has been suggested before and abandoned, since it makes no allowance for the fact that the funds may be used up in the early part of the period and no provision left for care in the latter part of that period; the present review systems would seem to be more feasible.

T.H. Sweetser, Jr., M.D.
Minneapolis, Minnesota

Echoes from Our Past

UFF DA

JACK D. KEY*

In reflecting on the merits of English education in general and that of Oxford in particular Hitch[1] suggests that one of the most important rewards of that system is learning to write well. He states that "There is in England and some other British countries a tradition of good writing and a tradition of much good reading that improves writing." An example is given (admittedly an extreme example) in which a bricklayer in a letter to his employer solicits workmen's compensation.

> Respected Sir:
>
> When I got to the building, I found that the hurricane had knocked some bricks off the top. So I rigged up a beam with a pulley at the top of the building and hoisted up a couple of barrels full of bricks. When I had fixed the building, there was a lot of bricks left over.
>
> I hoisted the barrel back up again and secured the line at the bottom, and then went up and filled the barrel with extra bricks. Then I went to the bottom and cast off the line.
>
> Unfortunately, the barrel of bricks was heavier than I was and before I knew what was happening the barrel started down, jerking me off the ground. I decided to hang on and halfway up I met the barrel coming down and received a severe blow on the shoulder.
>
> I then continued to the top, banging my head against the beam and getting my finger jammed in the pulley. When the barrel hit the ground it bursted its bottom, allowing all the bricks to spill out.
>
> I was heavier than the empty barrel and so started down again at high speed. Halfway down, I met the barrel coming up and received severe injuries to my shins. When I hit the ground, I landed on the bricks, getting several painful cuts from the sharp edges.
>
> At this point I must have lost my presence of mind, because I let go of the line. The barrel then came down giving me another heavy blow on the head and putting me in the hospital . . .

It is a beautiful letter — clear, simple, distinct, and pleasing. It has that quality, so typical of English writing, of dramatic effect dependent on understatement. If there is justice in the world our bricklayer received a favorable response to his request.

---

*Librarian, Mayo Clinic, Rochester, Minnesota.

Reference

1. Hitch, C: Reflections on Oxford and Education, *American Oxonian*, pp. 5-12, January, 1959.

Minnesota Medical Association Annual Meeting

Schedule of Events

All events are being held at the Radisson St. Paul Hotel unless otherwise indicated. Specialty Societies Caucus will be at 5:00 p.m. on May 1, 1985, at the MMA Office.

Wednesday, May 8

10:00 a.m. - 5:00 p.m.	Registration
10:00 a.m. - 12:00 noon	MMSC "Update on Critical Issues of Interest to Medical Practices in Minnesota"
10:00 a.m. - 4:00 p.m.	Cardiopulmonary Resuscitation (CPR) Class
12:00 noon - 2:00 p.m.	Buffet Lunch
1:00 p.m. - 4:00 p.m.	MMA Board of Trustees Meeting
1:30 p.m. - 4:30 p.m.	Hospital Medical Staff Section (HMSS) Meeting
4:00 p.m. - 6:00 p.m.	Ramsey County Medical Society Caucus
4:00 p.m. - 6:00 p.m.	Outstate Delegates Caucus
5:30 p.m. - 6:30 p.m.	Hennepin County Medical Society Caucus (Health Associations Center, Minneapolis)
6:00 p.m. - 7:00 p.m.	Welcome Reception
6:00 p.m. - 9:00 p.m.	Minnesota Women Physicians Dinner Meeting
7:00 p.m. - 10:00 p.m.	MMA Board of Trustees Dinner

Thursday, May 9

7:00 a.m. - 5:00 p.m.	Registration
7:00 a.m. - 8:00 a.m.	**Reference Committee Orientation Breakfast**
7:00 a.m. - 9:00 a.m.	MINNPAC Annual Meeting
7:30 a.m. - 9:00 a.m.	Ramsey County Medical Society Prayer Breakfast "Our Place in the Hunger Problem"
8:00 a.m. - 5:00 p.m.	Art Show
9:00 a.m. - 10:30 a.m.	Education Session on "Medical Practice Variations"
10:00 a.m. - 12:00 noon	Auxiliary Pre-Convention Meeting
11:00 a.m. - 12:30 p.m.	**House of Delegates - Session I**
12:30 p.m. - 2:00 p.m.	Recognition Lunch
12:30 p.m. - 2:30 p.m.	Auxiliary Luncheon (Gordon's, Union Depot Place)
2:00 p.m. - Evening	**Reference Committees**
6:30 p.m. - 7:30 p.m.	President's Reception
7:30 p.m. - 11:00 p.m.	Banquet

Friday, May 10

7:00 a.m. - 1:00 p.m.	Registration
7:00 a.m. - 8:30 a.m.	MMA Board of Trustees Breakfast Meeting
7:00 a.m. - 8:30 a.m.	Minnesota Academy of Family Physicians (MAFP) Caucus
8:00 a.m. - 5:00 p.m.	Art Show
8:30 a.m. - 10:30 a.m.	Hennepin County Medical Society Caucus
8:30 a.m. - 10:30 a.m.	Ramsey County Medical Society Caucus
8:30 a.m. - 10:30 a.m.	Outstate Delegates Caucus
9:00 a.m. - 11:45 a.m.	Minnesota Chapter, American College of Emergency Physicians (ACEP) Meeting
9:00 a.m. - 12:00 noon	Auxiliary Annual Meeting (The St. Paul)
10:30 a.m. - 3:00 p.m.	**House of Delegates - Session II** (includes buffet lunch)
12:00 noon - 1:30 p.m.	Minnesota Chapter, American College of Emergency Physicians (ACEP) Lunch
12:00 noon - 3:00 p.m.	Auxiliary Luncheon (The St. Paul)

Radisson Hotel St. Paul

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ORGANIZATION MINNESOTA MEDICAL ASSOCIATION
FUNCTION 132ND ANNUAL MEETING DATES MAY 8-10, 1985
ALL REQUESTS FOR THE ABOVE GROUP MUST BE RECEIVED BY APRIL 16, 1985

Please reserve accommodations for Print or Type
NAME ______________ LAST ______________ FIRST ______________ COMPANY ______________
ADDRESS ______________
CITY ______________ STATE ______________ ZIP CODE ______________
SHARING ROOM WITH ______________ NO OF PERSONS ______________
SIGNATURE ______________ PHONE NUMBER ______________

MONTH	DAY	YEAR

ARRIVAL DATE

ARRIVAL TIME

MONTH	DAY	YEAR

DEPARTURE DATE

CHECK IN TIME 3:00 PM
CHECK OUT TIME 1:00 PM

1985 Annual Meeting Overall Registration Form

All participants including Delegates, Hospital Medical Staff Section Representatives, Officers, Trustees, AMA Delegates and AMA Alternates **are required to complete a registration form** to obtain an identification badge. **Meal function tickets must be ordered** even if "complimentary" so that food may be ordered in the appropriate quantities.

Please print:

Name ______________ Office Phone ( )

Address ______________

City ______________ State ______________ Zip ______________

Please check one only:

- ☐ MMA Delegate
- ☐ MMA Alternate Delegate
- ☐ HMSS Representative
- ☐ MMA Member (M.D./Med.Student)
- ☐ Non-M.D. ______________ Please specify (e.g. clinic manager, R.N., administrator . . .)
- ☐ MMA Officer
- ☐ MMA Trustee
- ☐ AMA Delegate or Alternate
- ☐ MMA Non-member (M.D./Med.Student)

Continued on Reverse Side . . .

Overall Registration Form (continued)

*Delegates. Hospital Medical Staff Section Representatives, Officers, Trustees, AMA Delegates and Alternates. Award recipients and invited guests may attend all functions at no charge except for the President's Banquet which is free only to the invited guests.

Please indicate desired # of tickets in all applicable categories and CIRCLE appropriate payment column:

Wednesday, May 8				
CPR Class	______		Certification 6 hrs.(FREE)	Recertification 3 hrs.(FREE)
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Thursday, May 9				
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President's Banquet	______	ticket(s) @	$30.00 or	*Complimentary
Friday, May 10				
House of Delegates Buffet Lunch	______		FREE	FREE

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170 221

prescribing, see complete prescribing information in SK&F CO.
e or *PDR*. The following is a brief summary.

NING

drug is not indicated for initial therapy of edema or hypertension.
a or hypertension requires therapy titrated to the individual. If this
ination represents the dosage so determined, its use may be
convenient in patient management. Treatment of hypertension
edema is not static, but must be reevaluated as conditions in
patient warrant.

ndications: Concomitant use with other potassium-sparing agents
spironolactone or amiloride. Further use in anuria, progressive
hepatic dysfunction, hyperkalemia. Pre-existing elevated serum
um. Hypersensitivity to either component or other sulfonamide-
drugs.

s: **Do not use potassium supplements, dietary or otherwise, unless
emia develops or dietary intake of potassium is markedly impaired.**
ementary potassium is needed, potassium tablets should not be
yperkalemia can occur, and has been associated with cardiac irregu-
It is more likely in the severely ill, with urine volume less than
r/day, the elderly and diabetics with suspected or confirmed renal
iency. Periodically, serum K$^+$ levels should be determined. If hyper-
develops, substitute a thiazide alone, restrict K$^+$ intake. **Asso-
widened QRS complex or arrhythmia requires prompt additional**
. Thiazides cross the placental barrier and appear in cord blood.
pregnancy requires weighing anticipated benefits against possible
including fetal or neonatal jaundice, thrombocytopenia, other
reactions seen in adults. Thiazides appear and triamterene may
in breast milk. If their use is essential, the patient should stop
Adequate information on use in children is not available. Sensitivity
s may occur in patients with or without a history of allergy or
al asthma. Possible exacerbation or activation of systemic lupus
atosus has been reported with thiazide diuretics.

ions: The bioavailability of the hydrochlorothiazide component of
e' is about 50% of the bioavailability of the single entity. Theoreti-
patient transferred from the single entities of Dyrenium (triamterene,
O.) and hydrochlorothiazide may show an increase in blood pressure
retention. Similarly, it is also possible that the lesser hydro-
iazide bioavailability could lead to increased serum potassium levels.
r, extensive clinical experience with 'Dyazide' suggests that these
ns have not been commonly observed in clinical practice. Do
serum electrolyte determinations (particularly important in patients
g excessively or receiving parenteral fluids, and during concurrent
th amphotericin B or corticosteroids or corticotropin [ACTH]).
BUN and serum creatinine determinations should be made,
lly in the elderly, diabetics or those with suspected or confirmed
sufficiency. Cumulative effects of the drug may develop in patients
paired renal function. Thiazides should be used with caution in
with impaired hepatic function. They can precipitate coma in
with severe liver disease. Observe regularly for possible blood
ias, liver damage, other idiosyncratic reactions. Blood dyscrasias
een reported in patients receiving triamterene, and leukopenia,
cytopenia, agranulocytosis, and aplastic and hemolytic anemia
en reported with thiazides. Thiazides may cause manifestation of
diabetes mellitus. The effects of oral anticoagulants may be
ed when used concurrently with hydrochlorothiazide; dosage adjust-
may be necessary. Clinically insignificant reductions in arterial
iveness to norepinephrine have been reported. Thiazides have also
hown to increase the paralyzing effect of nondepolarizing muscle
ts such as tubocurarine. Triamterene is a weak folic acid antagonist.
odic blood studies in cirrhotics with splenomegaly. Antihypertensive
may be enhanced in post-sympathectomy patients. Use cautiously
ical patients. Triamterene has been found in renal stones in asso-
with the other usual calculus components. Therefore, 'Dyazide'
be used with caution in patients with histories of stone formation.
ccurrences of acute renal failure have been reported in patients on
e' when treated with indomethacin. Therefore, caution is advised in
tering nonsteroidal anti-inflammatory agents with 'Dyazide'. The
g may occur: transient elevated BUN or creatinine or both, hyper-
ia and glycosuria (diabetic insulin requirements may be altered),
icemia and gout, digitalis intoxication (in hypokalemia), decreasing
eserve with possible metabolic acidosis. 'Dyazide' interferes with
cent measurement of quinidine. Hypokalemia is uncommon with
e', but should it develop, corrective measures should be taken such
ssium supplementation or increased dietary intake of potassium-
ds. Corrective measures should be instituted cautiously and serum
ium levels determined. Discontinue corrective measures and
e' should laboratory values reveal elevated serum potassium.
e deficit may occur as well as dilutional hyponatremia. Concurrent
th chlorpropamide may increase the risk of severe hyponatremia.
PBI levels may decrease without signs of thyroid disturbance. Cal-
xcretion is decreased by thiazides. 'Dyazide' should be withdrawn
conducting tests for parathyroid function.

es may add to or potentiate the action of other antihypertensive

cs reduce renal clearance of lithium and increase the risk of lithium

e Reactions: Muscle cramps, weakness, dizziness, headache, dry
anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermat-
conditions; nausea and vomiting, diarrhea, constipation, other
ntestinal disturbances; postural hypotension (may be aggravated by
, barbiturates, or narcotics). Necrotizing vasculitis, paresthesias,
pancreatitis, xanthopsia and respiratory distress including pneu-
and pulmonary edema, transient blurred vision, sialadenitis, and
have occurred with thiazides alone. Triamterene has been found in
tones in association with other usual calculus components. Rare
ts of acute interstitial nephritis have been reported. Impotence has
ported in a few patients on 'Dyazide', although a causal relationship
t been established.

d: **'Dyazide' is supplied as a red and white capsule, in bottles of
capsules; Single Unit Packages (unit-dose) of 100 (intended for
onal use only); in Patient-Pak™ unit-of-use bottles of 100.**

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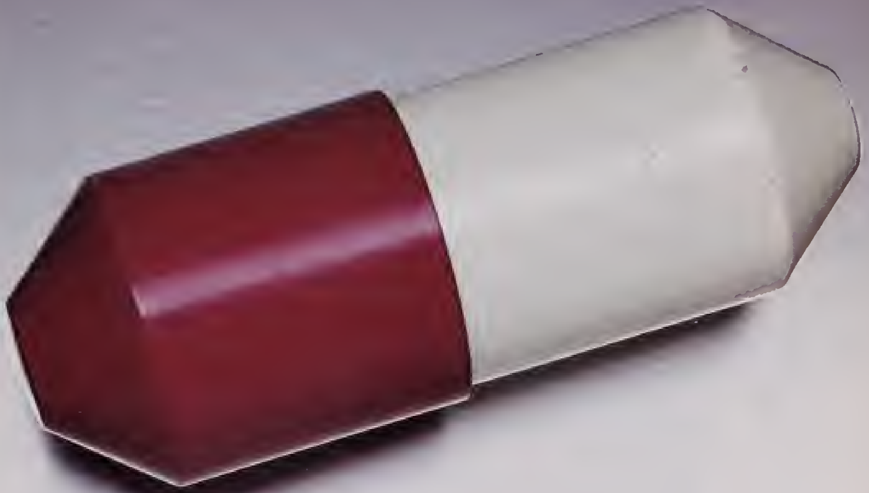
Serum K$^+$ and BUN should be checked periodically (see Warnings and Precautions).



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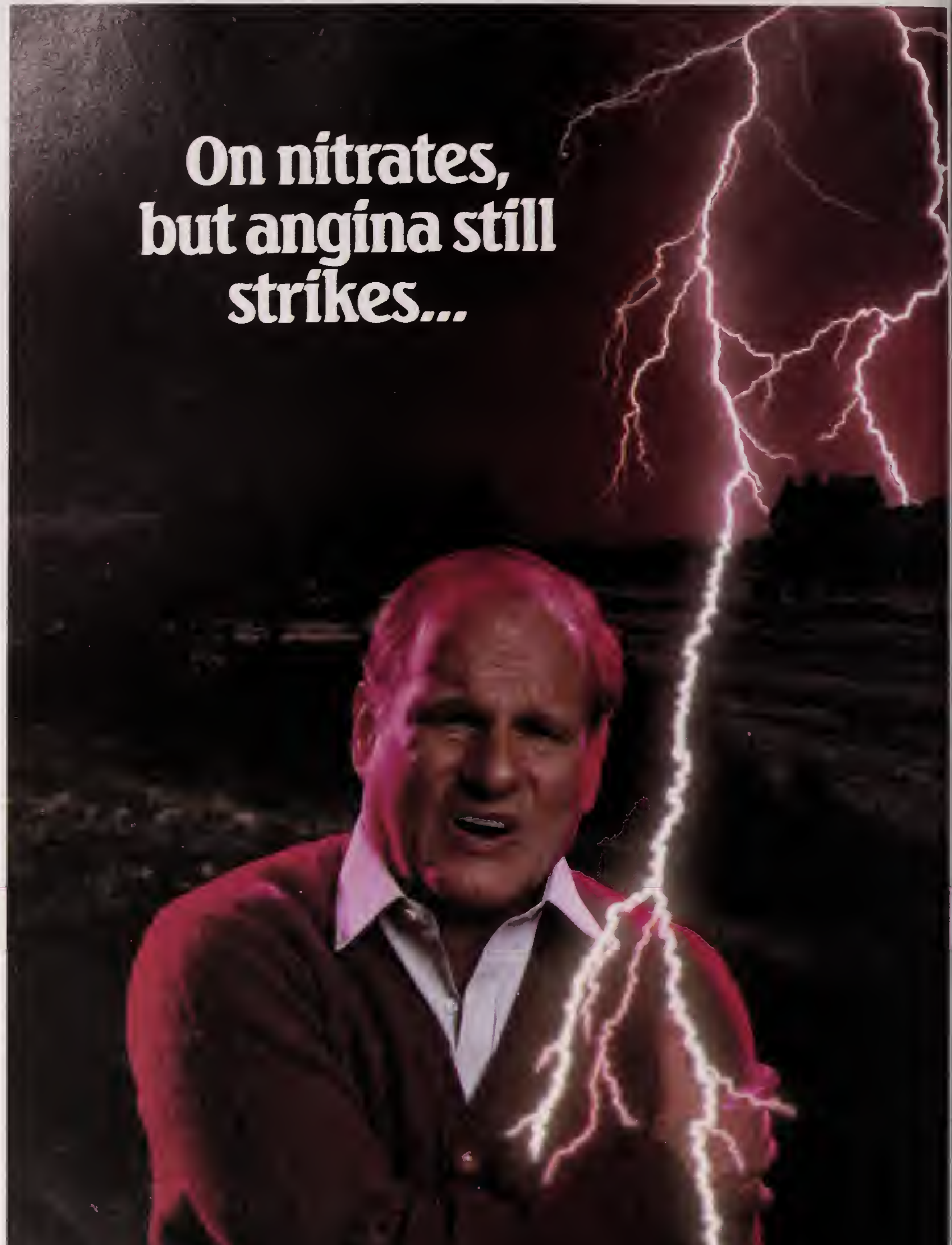
On nitrates,
but angina still
strikes...

After a nitrate, add ISOPTIN®

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To protect your patients, as well as their quality of life, add Isoptin instead of a beta blocker.

First, Isoptin not only reduces myocardial oxygen demand by reducing peripheral resistance, but also increases coronary perfusion by preventing coronary vasospasm and dilating coronary arteries — both normal and stenotic. These are antianginal actions that no beta blocker can provide.

Second, Isoptin spares patients the beta-blocker side effects that may compromise the quality of life.

With Isoptin, fatigue, bradycardia and mental depression are rare. Unlike beta blockers, Isoptin can safely be given to patients with asthma, COPD, diabetes or peripheral vascular disease. Serious adverse reactions with Isoptin are rare at recommended doses; the single most common side effect is constipation (6.3%).

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So, the next time a nitrate is not enough, add Isoptin... for more comprehensive antianginal protection without side effects which may cramp an active life style.

ISOPTIN. Added antianginal protection without beta-blocker side effects.

Please see brief summary on following page.

ISOPTIN® TABLETS

(verapamil HCl/Knoll)

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Contraindications: Severe left ventricular dysfunction (see *Warnings*), hypotension (systolic pressure <90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block. **Warnings:** ISOPTIN should be avoided in patients with severe left ventricular dysfunction (e.g., ejection fraction <30%) or moderate to severe symptoms of cardiac failure. Control milder heart failure with optimum digitalization and/or diuretics before ISOPTIN is used. ISOPTIN may occasionally produce hypotension (usually asymptomatic, orthostatic, mild, and controlled by decrease in ISOPTIN dose). Occasional elevations of liver enzymes have been reported; patients receiving ISOPTIN should have liver enzymes monitored periodically. Patients with atrial flutter/fibrillation and an accessory AV pathway (e.g., W-P-W or L-G-L syndromes) may develop a very rapid ventricular response after receiving ISOPTIN (or digitalis). Treatment is usually D.C.-cardioversion. AV block may occur (3rd degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema, and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with ISOPTIN. **Precautions:** ISOPTIN should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Studies in a small number of patients suggest that concomitant use of ISOPTIN and beta blockers may be beneficial in patients with chronic stable angina. Combined therapy can also have adverse effects on cardiac function. Therefore, until further studies are completed, ISOPTIN should be used alone, if possible. If combined therapy is used, patients should be monitored closely. Combined therapy with ISOPTIN and propranolol should usually be avoided in patients with AV conduction abnormalities and/or depressed left ventricular function or in patients who have also recently received methyldopa. Chronic ISOPTIN treatment increases serum digoxin levels by 50% to 70% during the first week of therapy, which can result in digitalis toxicity. The digoxin dose should be reduced when ISOPTIN is given, and the patient carefully monitored. ISOPTIN may have an additive hypotensive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after ISOPTIN administration. Until further data are obtained, combined ISOPTIN and quinidine therapy in patients with hypertrophic cardiomyopathy should probably be avoided, since significant hypotension may result. Adequate animal carcinogenicity studies have not been performed. One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. *Pregnancy Category C:* There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. It is not known whether verapamil is excreted in breast milk; therefore, nursing should be discontinued during ISOPTIN use. **Adverse Reactions:** Hypotension (2.9%), peripheral edema (1.7%), AV block: 3rd degree (0.8%), bradycardia: HR<50/min (1.1%), CHF or pulmonary edema (0.9%), dizziness (3.6%), headache (1.8%), fatigue (1.1%), constipation (6.3%), nausea (1.6%). The following reactions, reported in less than 0.5%, occurred under circumstances where a causal relationship is not certain: confusion, paresthesia, insomnia, somnolence, equilibrium disorders, blurred vision, syncope, muscle cramps, shakiness, claudication, hair loss, maculae, and spotty menstruation. Overall continuation rate of 94.5% in 1,166 patients. **How Supplied:** ISOPTIN (verapamil HCl) is supplied in 80 mg and 120 mg sugar-coated tablets. July 1982 2068

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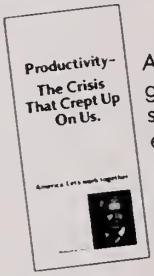
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Hospital in the Sistine Chapel

WARREN L. KUMP, M.D.*

In the year 1481 Sandro Botticelli was commissioned by Pope Sixtus IV to paint a fresco for the newly-completed Sistine Chapel. One of the assigned themes from the New Testament was a Temptation of Christ, a scene in which Christ is dared by Satan to prove His divinity by casting Himself from a pinnacle of the Temple. (Matthew IV, 5-6)

Botticelli lacked all knowledge of the appearance of the Temple of Jerusalem, but was undoubtedly aware of the tradition that Old St. Peters in Rome, as the main church of Christendom, was modeled after the Temple. Old St. Peters was at the time approximately 1150 years old and in an advanced state of decay. Botticelli therefore chose as his model for the painting the newly-completed Hospital of the Holy Spirit, which was of a somewhat similar facade. The choice of model must have pleased his patron, Sixtus IV, for the building of the hospital had also been commissioned by the pope, and the portion of the building depicted in the fresco is known to this day as the Sistine Ward. The choice of the hospital as model was also convenient for the artist, as it was located only a short stroll from the chapel.

So that is how it happens that under Michelangelo's celebrated ceiling, in the second panel from the end on the right hand side as one enters the chapel, are depicted Christ and Satan atop the Hospital of the Holy Spirit. The cupola upon which they are perched enclosed, at the time of the painting, the living quarters of the master (administrator) of the hospital, but it now houses the hospital board room and a historical medical library, Biblioteca Lancisiana. The ward below still accommodates medical patients, unaware that their hospital was once thought to resemble the Temple of Jerusalem.

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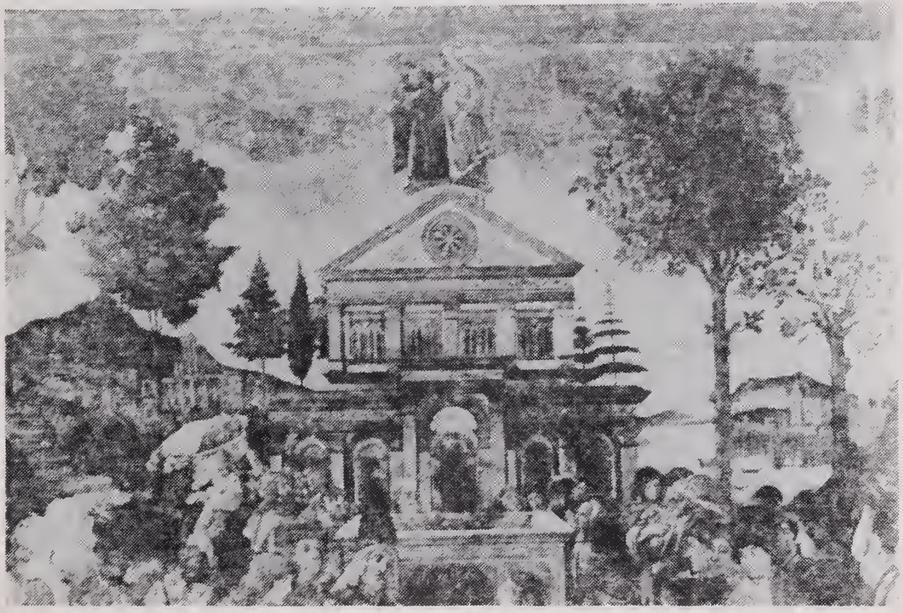
*Radiologist, North Memorial Hospital, Minneapolis.

References

1. De Angelis, Pietro: L'Architetto e Gli Affreschi di Santo Spirito in Saxia. Rome, Biblioteca della Lancisiana, 1961.
2. Ettlinger, LD: The Sistine Chapel Before Michelangelo. Oxford, Clarendon Press, 1965.
3. Legouix, Susan: Botticelli. London, Oresko Books, Ltd., 1977.



Detail from Botticelli's fresco in the Sistine Chapel showing Christ and Satan atop the Hospital of the Holy Spirit.

Hôtel-Dieu de Beaune

WARREN L. KUMP, M.D.

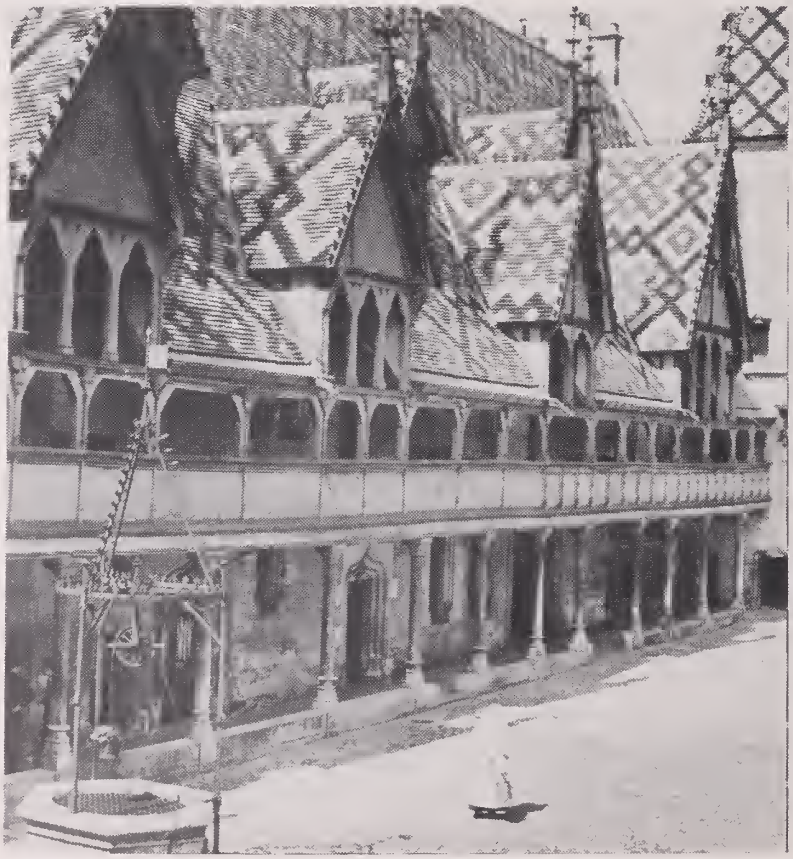
The oldest hospital in the world, in its original building, is the Hôtel-Dieu at Beaune, France. Probably the most quaint also, it was chartered in 1443 and dedicated in December, 1451. In one of its rooms hangs a magnificent painting, The Last Judgment, done in 1446 by the Flemish artist Roger van der Weyden and commissioned for the hospital by its founder, Nicolas Rolin.

Rolin and his wealthy wife assured the hospital's financial security and protected it forever from the ravages of inflation by endowing it with vineyards that increase in value every year. On the third Sunday of each November a wine auction, "the greatest charity sale in the world", is held as a hospital benefit. The auction is the centerpiece of a widely known three-day Burgundian bacchanal known as the "Three Glorious Days", replete with wine tastings, parades, folk dances and banquets. In recent times the auction has yielded well over a million dollars annually for the hospital.

Conceived originally for care of the poor, the hospital now opens its doors to all. The old building provides 125 beds for geriatric patients, each with his or her own cubicle aligned along the wall. There are 300 beds for general patients in a modern annex outside the old city.

References

1. JAMA, 196, 147, 1966.
2. JAMA, 241, 2720, 1979.
3. National Geographic Magazine, 153, 815, 1978.



Hôtel-Dieu, Beaune, France. Oldest hospital in the world in original building. Courtesy French Government Tourist Office.

The Medical Industrial Complex, Stanley Wohl, M.D., New York: Harmony Books, 1984, pp. 218, $14.95.

> *For the medical profession this era may well be one of the most shameful and ethically questionable periods in its history. For all of us it is a really sad time, the passing of virtually a whole other way of life. The encounter between physician and patient used to involve a sacred trust. A physician was one of the few people one could confide in, sure he had nothing but one's best interests at heart . . . Now, what is the patient to think when his doctor's office is located within a hospital owned by a corporation listed on the New York Stock Exchange? pp. 95-6*

This book is absolute required reading for every physician who is worried about and wishes to understand the radical changes that are taking place in health care delivery in the 1980s. Dr. Wohl picks up where Paul Starr's *The Social Transformation of American Medicine* leaves off and applies Eisenhower's insightful phrase, "the military industrial complex" to the medical reality. As a staff member of the Stanford University Medical Center and president of InfoMed Systems, a health and research company, Wohl knows both the world of business and that of medicine.

The central issue is whether the ethos if not the ethic of medicine as a humane profession can be harmonized with for profit, corporate medicine. In the 1960s with Medicare and Medicaid, health care became an entitlement for many sectors of our population. Third party payment insulated consumers from the true cost of care and, with health care moving into double digit figures of our GNP, Wall Street moved with alacrity into the field. Ironically, American medicine had been so preoccupied in fighting off "socialized medicine" that it has only recently awakened to the fact that the corporate America it had always defended, could itself erode its turf and restrict its autonomy. Dr. Wohl believes that medical authority is passing from physicians to a new breed of robber baron, with peril for all of us.

The present Medical Industrial Complex (MIC) is made up of 500 for profit corporations. After their emergence, according to Paul Starr, the hospital chains grew faster in the 1970s than the computer industry. But if it were to encounter financial difficulty in ten years or more, would their executives have as first obligation the interest of their stockholders or the hospitals themselves? What is good for the Hospital Corporation of America may not necessarily be good for a sick patient.

Dr. Wohl fears, as I do, that corporate medicine is causing an erosion of ethics. In 1848, the first Code of Ethics of the fledgling American Medical Association prohibited physicians from advertising and patenting medicines and appliances. While those "in trade," as the English say, could do so, such practices were contrary to the healing profession as well as to the perceived common good. Of course, the paradox of the profession has always been the conflict between self-interest and altruism. In spite of a few avaricious physicians, most have put patient well being before financial personal enhancement. But physicians like all humans have feet of clay and it is an issue of great moral weight that corporate M.B.A.'s with sharp pencils can reward physicians for either under or over treatment of their patients.

It was disquieting to learn last November as a result of the WCCO TV "I Team" report that physicians need "permission" from certain H.M.O executives for certain medical regimens. What is presently transpiring at a for profit hospital in Louisville, Humana Incorporated, is troublesome because one is not quite sure in whose interest the artificial heart research is being done. This much is sure: there is good corporated ethics and good medical ethics. That at some points they overlap, no one should doubt; that they are isomorphic, everyone should doubt!

Ethical ambiguities involve the possible co-opting of physicians by making them members of corporate boards as well as "closing the circle" (in economics class I learned it as "vertical integration") by linking providers, suppliers, and patients. Some medical conglomerates own everything from hospitals and nursing homes to linen and cutlery supply houses and almost everything else between. But the trend toward monopoly will increase not lower costs. Indeed, Wohl cites studies that proprietary medical chains charge patients more than the nonprofits do for similar services.

One third of the book is given over to an analysis of 35 corporations within the MIC. Surprisingly, at the end of the work, Dr. Wohl moderates his indictment. He admits the MIC is here to stay and that the public should recognize its strength and fight to correct its weaknesses. Both public and private, entitlement and for profit paradigms, must be viewed non ideologically and as complimenting each other rather than as antagonists. An "unsuitable marriage" of divergent systems can work if there are prudent political controls and consumers. "I am convinced," admits Wohl, "that the MIC must be an integral part of any future cost-effective system.'' Nonetheless, I closed his book with this Old Testament like, prophetic judgment ringing in my ears:

> The corporations conquered because over the last twenty years everyone else fouled up. Government, the medical profession, insurance companies, and the so-called health experts and consultants had produced a money-sapping monster that only euphemistically could be referred to as a health care system. The corporations bit off a chunk of the system and made it work. Spurred on by greed and acquisitiveness they showed how to turn a profit pushing hospital beds. Woe to the medical profession. Woe to the patient. Woe to the country. (p. 90)

Walter W. Benjamin, Ph.D.
Hamline University
St. Paul, Minnesota

Diabetes: The Comprehensive Self-Management Handbook
John F. Aloia, M.D., Patricia Donohue-Porter, R.N., M.S.N., and Laurie Schlussel, R.D., M.A., 437 pages, $19.95, 1984, Doubleday & Company, Garden City, New York.

This book is indeed comprehensive, but as a self-management handbook it seems directed to biochemistry majors and health professionals who have diabetes. A sampling of subheadings illustrates the reading level problem of the text: ''Contrainsulin Hormones,'' ''Fuel Homeostasis in Diabetes,'' ''Biological and Experiential Determinants,'' ''Distal Symmetrical Polyneuropathy,'' etc. The information is presented in textbook fashion, with minimal illustration, and as such this book is not likely to be accepted as a convenient patient handbook.

The average person with diabetes would quickly become overwhelmed by the scope of physiological information, very little of which has to do with information needed for self-management. However, the text may prove useful to health professionals who work with people who have diabetes. The 23 chapters, 11 appendixes, and index provides a good reference to the full spectrum of issues of concern to people with either insulin-dependent or non-insulin-dependent diabetes.

Judy Ostrom Joynes, R.N., M.A.
Director of Education
International Diabetes Center,
Minneapolis

Intensive Care of the Newborn Infant: A Practical Manual by Theodore R. Thompson, M.D., University of Minnesota Press, $29.50.

This manual is exactly what it is described as: a practical manual for the intensive care unit of a hospital. This manual which has grown out of basically the original guidelines developed for resident teaching at the University of Minnesota is a very detailed, how-to-do-it manual. It certainly is valuable for anyone dealing with resuscitation and stabilization of newborn infants. It is a manual which could be used for teaching nurses and others who might be involved with intensive care type of dealings with infants. This manual certainly has its greatest applicability in intensive care units for orienting and training new personnel.

Peter E. Fehr, M.D.
St. Paul, Minnesota

Interspecialty Council Highlights

Current Activities of the Interspecialty Council

January 1985

Audiologist Licensure

Kathleen Meyerle, Chief Lobbyist for the MMA, reported on the various issues being studied during the 1985 Legislature. One of the issues discussed was regarding the speech language pathologists and audiologists who are seeking licensure in the state legislature. Following a discussion, a motion was approved by the Interspecialty Council stating its opposition to licensure and its neutral stance on registration of audiologists and speech language pathologists.

Professional Liability

The MMA Legisltive Committee and lobbyists are working to establish a discount rate to determine settlement values in malpractice suits and are opposing increases in the statue of limitations for adult medical lawsuits. The ISC Steering Committee expressed and identified their concern that standards of practice for physicians are being raised beyond what is humanly possible. After the discussion by the Council, a motion was approved stating that the Interspecialty Council recognize the seriousness of the professional liability issue, referring to the Board of Trustees their recommendation that the issue be addressed seriously by the MMA, in whatever forum the Board deems most appropriate.

Exclusive Dealings Clauses

The Council discussed a bill prepared by the MMA to prohibit HMOs from establishing exclusive dealings clauses in contracts with clinics. Members of the Council expressed concern that physicians need to be better educated to know how to sign contracts with health plans. The Council also discussed other ramifications which would develop from this type of legislation.

Public Health Issues

Other public health issues before the state legislature at this time are seat belts, motorcycle helmets, no smoking initiatives and drinking age. The current status on each of these issues was discussed. John Gates, M.D. and Lawrence Schut, M.D. were appointed to consult with the MMA lobbyists on the seat belt issue.

Chiropractic Venipuncture

The majority and minority reports of the Joint Legislative Study Commission on the utilization of venipuncture were again distributed to members of the Council to review the on-going issue of the chiropractic scope of practice.

Physician Legislative Testimony

Because of the tremendous impact of physicians testifying in the Legislature regarding health care issues, Robert Christensen, M.D., Chairman of the MMA Interspecialty Council, charged each ISC member to contact their legislators before the March meeting. The Legislative Committee also urges physicians to volunteer to testify at legislative hearings on bills of concern to the physician community and to serve as a resource for legislators regarding health care issues and MMA positions.

Linda K. Lacher*

If you have any questions concerning the above, please contact your Interspecialty Council representative.

Interspecialty Council Representatives

MN Allergy Society
  William Schoenwetter, M.D., 612/927-3091
MN Society of Anesthesiologists
  Eldore B. Nash, M.D., 612/520-5370
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MN Neurosurgical Society
  Burton Onofrio, M.D., 507/284-2611
MN Society of Neurological Sciences
  John Gates, M.D., 612/221-3700

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*Director, Specialty Society Services and Assistant Director of Policy and Liaison, Minnesota Medical Association, Minneapolis.

Interspecialty Council Representatives (continued)

Association of Neurologists of Minnesota
Lawrence Schut, M.D., 612/725-6767

MN Obstetrical and Gynecological Society
Charles J. McCarthy, M.D., 612/227-9141

North Central Occupational Medical Association
Robert MacCornack, M.D. 612/927-3170

MN Academy of Ophthalmology & Otolaryngology
George L. Adams, M.D. 612/373-8846 — OTO
James Trautmann, M.D., 507/284-2511 — OPH

Mn Association of Ophthalmology
Raymond Croissant, M.D. 612/927-7138

Minnesota State Orthopedic Society
Rudolph Klassen, M.D. 507/284-3662

MN Society of Clinical Pathologists
Richard W. Anderson, M.D., 612/221-1719

MN Chapter, American Academy of Pediatrics
Lowell W. Barr, M.D., 507/373-1441

MN Physiatric Society
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MN Society of Plastic Surgeons
William Carter, M.D., 612/925-1765

MN Psychiatric Society
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MN Thoracic Society
F. L. Rasp, M.D., 612/333-2156

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Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

PRIL, 1985

Neonatal Resuscitation Course; North Memorial Medical Center, E; Robbinsdale, MN; CONTACT: Peter Marshall, M.D., 3300 Oak- North, Robbinsdale, MN 55422; 520-5200.

1-12 Third Annual OB/GYN Update; St. Paul-Ramsey Medical ıter; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, /221-3980.

1-13 Allergy and Clinical Immunology; University of MN, Of- of CME; Mayo Memorial Auditorium, Minneapolis; CONTACT: ice of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. SE, neapolis, MN 55455; 612/373-8012.

2-13 Colorectal Problems for Primary Care; University of MN, ice of CME; Hyatt Regency, Mpls.; CONTACT: Office of CME, iversity of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 455; 612/373-8012.

2-13 Eating Disorders; University of MN, Office of CME; Earle wn Center, Univ. of MN, St. Paul; CONTACT: Office of CME, iversity of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 455; 612/373-8012.

3 Spring Scientific Meeting; Minnesota Society of An- hesiologists; Hilton Inn, Minneapolis; CONTACT: Secretary, MN So- ty of Anesthesiologists, 200 First St. SW, Rochester, MN 55905; 7/286-8701.

3 MSCP Spring Seminar; Minnesota Society of Clinical Pathologists; att Regency, Minneapolis; CONTACT: Pam Lindberg, MMA, 2221 iversity Ave. S.E. — 400, Mpls., MN 55414, 612/378-1875.

5-19 Family Practice Review: Update 1985; University of MN, ffice of CME; Radisson, St. Paul; CONTACT: CME, University of MN, x 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

8-19 Pediatric Days; Mayo Clinic/Mayo Foundation; Rochester; NTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 7/284-2085.

3-May 17 Advanced Cardiac Life Support Certification; Francis Regional Medical Center, Education Department; Shakopee, ; CONTACT: Judy Hoff, Ed. Director, St. Francis Regional Medical nter, Shakopee, MN 55379; 612/445-2322.

19-20 8th Annual Clinical Update in Practical Cardiology; Abbott-Northwestern Hospital; Minneapolis; CONTACT: Sally Ventres, 800 E. 28th St., Mpls., MN 55407, 612/874-4300.

22-26 Diagnostic & Therapeutic Concepts in Clinical Endocrinology, 1985; American College of Physicians; Mayo Clinic; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

26 Carpol Tunnel Syndrome & Other Upper Extremity Nerve Compression Conditions; Metropolitan Hand Surgery Associates; St. Thomas College, O'Shaughnessy Ed. Center; CONTACT: Rose; 291-8773.

26 New Technology in Medicine; The Duluth Clinic, Ltd.; Fitger's Inn, Duluth, MN; CONTACT: J.G. Brueggemann, M.D., 400 East Third St., Duluth, MN 55805; 218/772-8364.

26-27 Frontiers in Medicine; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Public Relations, 69 West Exchange Street, St. Paul, MN 55102; 612/291-3062.

26-27 Ophthalmic Reviews — 1985; Mayo Clinic/Mayo Foundation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

MAY, 1985

1-3 Pulmonary Function Testing Workshop; St. Paul-Ramsey Medical Center; St. Paul; CONTACT: Ruth K. McIntyre, 612/221-3980.

2-3 Health and Addiction; University of MN, Office of CME; Mpls. Plaza Hotel; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

3 Antiviral Therapy; University of MN, Office of CME; Radisson University, Mpls; CONTACT: Office of CME, Univ. of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

3 ENT in Primary Care; St. Joseph's Hospital; St. Paul; CONTACT: Judy Stroebel, Pub. Relations, 69 West Exchange St., St. Paul, MN 55102, 612/291-3062.

3-4 State of the Art in Pediatrics; Park Nicollet Medical Foundation; Radisson Inn Plymouth; CONTACT: Elaine Anderson, 5000 W. 39th St., Mpls., MN 55416; 927-3703.

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Robert Pierce Cleft Palate Workshop: Current Treatment thods; Services for Children with Handicaps, MN Dept. of Health; iday Inn, Duluth; CONTACT: Tom Sweet, SCH, 717 Delaware St., 9441, Mpls., MN 55440; 623-5163.

·10 Practice of Internal Medicine — 1985; Mayo Clinic/Mayo ındation; Rochester; CONTACT: William L. Nietz, 200 First St. SW, chester, MN 55905; 507/284-2085.

-10 MMA Annual Meeting; Radisson St. Paul; CONTACT: Eugenia Kassar, Director, CME & Meeting Services, MMA, 2221 University e. S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

Aids 1985 and beyond: Epidemiology, Virology, Diagnosis and ınagement; MN Dept. of Health; Hennepin County Community Health pt; Dept. of Med., Hennepin County Medical Center; and Dept. of d., Univ. of MN Hospitals; Hennepin County Medical Center; CON- CT: Jack Korlath, Acute Disease Epidemiology Sec., MDH; 623-5414

3-14 Basic Life Support (CPR) Course, Certification/ certification; Methodist Hospital; St. Louis Park; CONTACT: Lisa llins, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, Mpls., N 55426; 932-5189.

5 Update on Arrhythmias; Office of CME, University of MN; Min- ıpolis Plaza Hotel; CONTACT: Bart W. Galle, Ph.D., Interim Director, x 293 Mayo Mem. Bldg., 420 Delaware Street SE, Mpls., MN 55455; 3-8012.

-21 Great Plains Organization for Perinatal Health Care, 15th nual Meeting; Radisson South Hotel, Mpls.; CONTACT: Mary Clung, Box 5039, Sioux Falls, SD 55117-5039. 605/333-7191.

9-20 Heart Attack Prevention Workshop; University of MN, fice of CME; Wilder Forest, Stillwater, MN; CONTACT: Office of IE, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., N 612/373-8012.

1 Gynecologic Oncology; University of MN, Office of CME; Rad- on University, Mpls; CONTACT: Office of CME, Univ. of MN, Box 3 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

2-24 Current Concepts in Radiation Therapy; University of N, Office of CME; Mayo Memorial Bldg., Minneapolis; CONTACT: ıiversity of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, pls., MN 55455 612/373-8012.

UNE, 1985

-2 Surgery for Primary Care; Office of CME, University of MN; agun's, Brainerd; CONTACT: Bart W. Galle, Ph.D., Interim Director, x 293 Mayo Memorial Bldg., 420 Delaware St., SE, Mpls., MN 55455; 3-8012.

4 Immunology Seminar — Evaluation of the Child with Recurrent Infections; Minneapolis Children's Medical Center; Minneapolis; CONTACT: Medical Ed. Dept., Minneapolis Children's Medical Center, 2525 Chicago Avenue South, Mpls., MN 55404; 874-6206.

5-7 Topics and Advances in Pediatrics; University of MN, CME; Radisson University Hotel, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN, 55455; 373-8012.

5, 12, 13 Basic Life Support (CPR) Course; Methodist Hospital; St. Louis Park; CONTACT: Mary Ann Kempcke, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, Minneapolis, MN 55426; 932-5162.

5-7 Topics and Advances in Pediatrics, University of Minnesota, CME; Radisson University Hotel, Minneapolis; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

7-8 Clinical Hypnosis; University of MN, CME; Earle Brown Center, Univ. of MN, St. Paul; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012

7-8 Advances in Stroke Management; Abbott Northwestern Hospital; Plaza Hotel, Minneapolis; CONTACT: Sally Ventres, Abbott Northwestern Hospital, 800 East 28th St., Minneapolis, MN 55407; 612/874-4300.

7-9 Surgery for Primary Care; University of MN, CME; Cragun's, Brainerd, MN; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

14-15 Hospital Nutrition Support; University of Minnesota, CME; Radisson University Hotel, Minneapolis; CONTACT: University of Minnesota, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

20-22 Behavioral Pediatrics; University of Minnesota, CME; Earle Brown Center, University of MN, St. Paul; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012

24-26 Breast and Endocrine Surgery; University of MN Medical School, Department of Surgery; Willey Hall, University of Minnesota, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

24-28 Advanced Cardiac Life Support; Methodist Hospital; St. Louis Park; CONTACT: Joan Peterson, RN, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 932-5419.

25-26 Advanced Cardiac Life Support Course; North Memorial CME; Robbinsdale; CONTACT: G. Patrick Lilja, M.D., North Memorial Medical Center; 3300 Oakdale North, Robbinsdale, MN 55422; 520-5535.

27 Neonatal Resuscitation Course; North Memorial Medical Center, CME; Robbinsdale, MN; CONTACT: Peter Marshall, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 520-5200.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical ssociation, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

CNS Trauma and Disease for Primary Care Physicians

May 16-17, 1985 — Radisson Plaza Hotel, St. Paul, Minnesota

This clinical briefing is designed to update primary care physicians, nurses and emergency personnel (EMTs and paramedics) on initial assessment and appropriate management of the most common CNS trauma and disease problems. Content will focus on both adult and pediatric concerns.

Sponsors: Department of Neurosurgery and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: 11 AMA Category I hours, 11 AAFP prescribed hours

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

Management of Common Psychiatric Problems in Primary Care

June 21-23, 1985 — Breezy Point Resort, Brainerd, Minnesota

Content will focus on newer approaches in the diagnosis and management of psychiatric problems commonly encountered by primary care physicians. Educational format will include lectures, informal discussions, video tape sessions, and "hands on" participation in an interactive computer-assisted program.

A variety of recreational and sporting activities including golf, tennis, swimming, boating, fishing and horseback riding will be available during leisure time, with many points of interest nearby.

Sponsors: Department of Psychiatry and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: 10½ AMA Category I hours, 10½ AAFP prescribed hours

Registration Fee: $190 for those staying at Breezy Point; $230 for commuters

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

Second Annual St. Paul-Ramsey Trauma Conference (fishing and family recreation)

August 1-4, 1985 — Fox Hills Resort, Mishicot, Wisconsin (Lake Michigan)

This program will combine a high quality educational program with summertime leisure activities on Lake Michigan. The educational component is designed to update physicians on current procedures for initial assessment and appropriate management of adult and pediatric trauma injuries. Time will be set aside for informal learning through discussion and videotape sessions.

In addition to recreational and sporting activities at the resort, charter fishing will be available on Lake Michigan.

Sponsors: Burn Center and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: AMA Category I, AAFP prescribed hours

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

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INTERNIST-NEPHROLOGIST, INTERNIST-GASTROENTEROLOGIST, INTERNIST-GENERALIST — Sought for multispecialty group practice in Northern Minnesota. New 175 bed hospital with dialysis unit, full diagnostic services and support facilities. Nationally acclaimed school system and broad range of recreational facilities. Excellent opportunity for aggressive internist. Liberal compensation system. Excellent fringes. Telephone calls will not be accepted. Send curriculum vitae to: John Brust, Mesaba Clinic, 1814 14th Avenue East, Hibbing, MN 55746.

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OPHTHALMOLOGIST, NEUROLOGIST — Otolaryngologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

FAMILY PHYSICIAN needed for a 5-physician group in a growing suburb in the metropolitan area, offering amenities of both cosmopolitan and rural life-style. Very competitive compensation and benefits. Contact Jeff R. Michell, M.D. or Gloria Vierling, Business Manager at 612-445-6440 in SHAKOPEE, MINNESOTA 55379.

WANTED: Family practitioner to join a 5 physician partnership in Litchfield, MN (a pleasant town of 6000 located 70 miles west of Minneapolis). If interested, please write or call collect at (612) 693-2804, Daniel A. Johnson, M.D., 35 E. 4th St., Litchfield, MN 55355.

FAMILY PRACTITIONER for Mankato Clinic satellite office. Excellent group practice opportunity in all-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R. F. Roskens, Administrator or B. C. McGregor, M.D. (507) 625-1811.

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Opportunities available: Board Certified or Board Eligible Ophthalmologist, Board Certified or Board Eligible Internist with subspecialty training, Board Certified or Board Eligible Family Practitioners to expand our Family Practice Department and offer opportunity of Branch Office practice. Contact C.C Lowery, Clinic Administrator at (218) 751-1280, home (218) 751-9718 or Jerry Thompson, M.D. (218) 751-1280, home (218) 751-9437.

PEDIATRICS AND FAMILY PRACTICE positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTICE PHYSICIANS — A large progressive and growing multi-specialty and family practice group has openings for fulltime family practice physicians in a satellite and urgi-center location. We are located in a community of 100,000 in the upper Midwest close to a Minnesota resort lake area. Please send curriculum vitae to Personnel Director, Dakota Clinic, Ltd., P.O. Box 6001, Fargo, ND 58108.

(Continued on page 328)

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Family practice: BC/BE to work in multi-specialty clinic located in beautiful river town. Outstanding prerequisites and salary. Starting date open. Call or write: M.T. Sprangers, M.D., Interstate Medical Center, Highway 61 West, Red Wing, MN 55066. 612/388-3503.

East range clinics, Ltd. seeks physicians in the following specialties: obstetrics/gynecology, orthopaedic surgery, and ophthalmology. Opportunity to enter established practice with progressive multi-specialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

Farmington, mn, four-man Family Practice group seeks to replace leaving partner. Board eligible — board certified desired. River's Edge Medical Clinic offers proximity to metropolitan area, 55 bed JCAH with 65 bed nursing home, resident ER hospital coverage nights and weekend, modern clinic with established practice. Contact Murray H. Hunter, M.D., River's Edge Medical Clinic, 310 Division Street, Farmington, MN 55024. (612) 463-7181.

Physician opportunities available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

Family practice — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Family practice position available July 1, 1985 to replace retiring member of six man family practice association in St. Cloud. Contact by mail, Family Practice Associates, 103 Doctors Park, St. Cloud, MN 56301.

Family practice physician needed for rapidly growing multi-specialty clinic. Outstanding opportunity, good salary and excellent benefits. Clinics are located in the northern suburbs with easy access to both Minneapolis and St. Paul. Three satellite clinics are located within a 15 mile radius of the main Clinic. For more information, contact Vivian Hoese, Administrator, Multi Care Associates of the Twin Cities, 7675 Madison Street N.E., Fridley, MN 55432, (612) 786-2700.

Minneapolis community clinics seeking full and part-time family practice physicians, also physicians able to do substitute work. Opportunity for physicians interested in community health to be a member of a team of health professionals providing comprehensive health services and health education. Clinics offer flexible hours, professional liability insurance, competitive salaries and benefits. Contact: Jane Berg, 2233 University Avenue #200, St.Paul, MN 55115 (612) 644-6555.

1985 CME Cruise/conferences on selected medical topics — Caribbean, Mexican, Hawaiian, Alaskan, Mediterranean. 7-14 days year-round. Approved for 20-24 CME Cat. 1 credits (AMA/PRA) & AAFP prescribed credit. Distinguished professors. Fly roundtrip free on Caribbean, Mexican, & Alaskan cruises. Excellent group fares on finest ships. Registration limited. Pre-scheduled in compliance with present IRS requirements. Information: International Conferences, 189 Lodge Ave., Huntington Station, N.Y. 11746. (516) 549-0869.

Moonlighting or locum tenens position desired; Recently Minnesota licensed physician is seeking temporary positions in General practice, Urgicare, and Emergency medicine, after July 1985. Reply Minnesota Medicine (750), 2221 University Ave. S.E., Suite 400, Minneapolis, MN 55414.

Needed: family physician and/or OB.GYN. for permanent location with Paynesville Medical Clinic, P.A.. Three established family physicians now in clinic. New hospital with full privileges. Salary negotiable. 90 minutes from Minneapolis on N.W. Hiway 55 on Lake Koronis. Immediate position available. Please call collect or write: R.J. Lindeman, M.D., Paynesville Medical Clinic, P.A., Paynesville, MN 56362, (612) 243-3779 Office, (612) 243-3633 Home.

Wanted: One or two internists to join solo internist. Write: Internist, Box 1161, St. Cloud, MN 56302.

Classified Advertisements

OB-GYN AND FAMILY PHYSICIAN — Grand Rapids, Minnesota. The Itasca Clinic needs both an OB/GYN person and a family physician to further enhance our talented and aggressive multi-specialty staff. Outstanding practice opportunity. A great place to live. Write Ted Brill, Administrator, 355 River Road, Grand Rapids, MN 55744. Call MN Toll Free 1-800-662-5770 or 218-326-6613.

OCCUPATIONAL MEDICINE — Position available with Mankato Clinic, Ltd. Full range of pre-employment, occupational medicine and emergency duties, along with general practice as desired. All-American community; full range of benefits and liberal time off; salary first year, incentive pay after. For more information, call collect: R.F. Roskens, Adm. or B.C. McGregor, M.D., 507-625-1811.

FAMILY PRACTICE — A progressive community located in scenic northern Wisconsin offers a variety of recreational and practice opportunities. A family practitioner is definitely needed, and we offer financial backing and guarantees. Our area provides an excellent education system for your family. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTITIONER – Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

FAMILY PRACTICE ORIENTED multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

OB-GYN WANTED by 14-member clinic. We are located in a community of 18,000 with a drawing area of approximately 45,000, 50 miles south of Minneapolis-St. Paul. Guaranteed salary the first year plus full fringe benefit package. Contact: Ray W. Wood, M.D. or Darral Mischke, Admstr., Faribault Clinic, 924 NE First Street, Faribault, MN 55021, Telephone: (507) 334-3921.

CANTERBURY INN BED & BREAKFAST — Rochester's unique alternative to hotel living. Victorian charm with modern comforts. Private baths, fireplace, central air conditioning, gourmet or special diet breakfast anytime, ''teatime'' (wine, hors d'oeuvres, etc.) daily. Private, offstreet parking, 3 blocks to Mayo Clinic and St. Mary's. A very special place for you, your colleagues, and your patients while in Rochester. $50/single, $60/dbl. 723 2nd. St. S.W., Rochester, MN 55902 (507) 289-5553.

MEDICAL DIRECTOR Willmar State Hospital, a JCAH accredited 642-bed hospital serving the mentally retarded, mentally ill, and chemically dependent, has a salaried position for a Medical Director/Staff Psychiatrist. Willmar, Minnesota is a growing city of 18,000 in the Minnesota lake country 90 miles west of Minneapolis/St. Paul. Salary to $80,000 depending upon qualifications. Excellent benefits. Please send resume to Lester E. Johnson, Chief Executive Officer, Willmar State Hospital, Box 1128, Willmar, MN 56201. An equal opportunity/affirmative action employer.

PEDIATRICS, ORTHOPEDICS, AND FAMILY PRACTICE in the southwest: Thomas-Davis Medical Centers, a multi-specialty group practice network in Tempe, Tucson, and Green Valley, Arizona, need a Pediatrician, an Orthopedic Surgeon, and a Family Practitioner. First year guarantee plus incentive, early shareholder, and full fringes. Tennis and golf year-round. University medical school in Tucson. Doctor-owned HMO doing 25% prepaid. Call or write: F. William Rundle, M.D., at (602) 881-7100 — P.O. Box 12650, Tucson, AZ 85732.

OB/GYN — Central Minnesota — Progressive, 9000 member staff-model HMO seeks a second OB/GYN for its family-practice based staff. Should be board certified or eligible and sensitive to women's issues. Excellent working environment with competitive compensation. College community located 70 miles from Minneapolis/St. Paul. Contact Deborah McCarl, M.D., 1245 15th Street North, St. Cloud, MN 56301, (612) 253-5220.

FAMILY PRACTICE OPPORTUNITIES — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. ''Convenience Care Clinic'' opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

(Continued on page 330)

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MEDICAL CARE CLINIC in Sun City, Arizona, multispecialty clinic seeks Neurologist, Gynecologist, Ophthalmologist, Internal Medicine, Gastroenterologist and Dermatologist. Area served has approximately 100,000 population, and three full-service hospitals. Retirement community surrounded by rapidly growing communities. Terms negotiable. Contact Barry Horst, 10448 W. Coggins, Sun City, Arizona 85351 (602) 933-5457.

FAMILY PHYSICIAN wanted to join solo practitioner in south Minneapolis. Call shared with two others. Human side of medicine a priority. Contact Judith Wanschura, M.D. 827-4751.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

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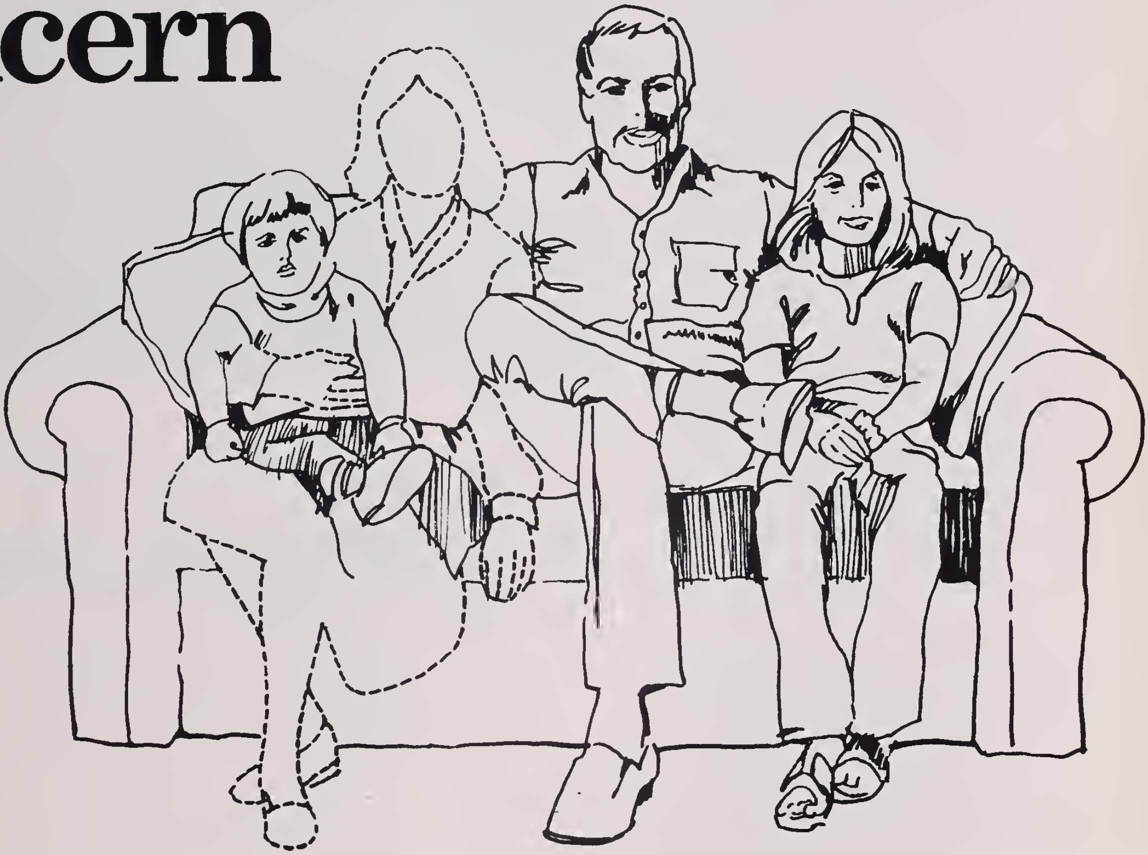

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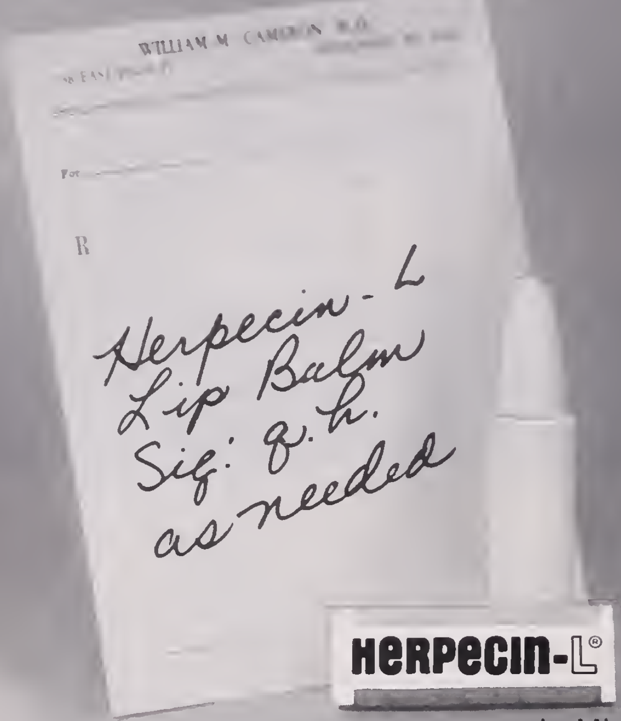

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President's Letter

Care of the Poor and Near Poor

Doctors traditionally have cared for those who have not been able to afford medical care. The new limitations on health resources will exacerbate this situation for the underserved and the physician. I would urge physicians to continue this tradition, even though we, ourselves, have increasingly limited resources; an example is the totally inadequte payment schedule from our Department of H & HS (welfare), despite our increasing costs. Economically disadvantaged groups include the unemployed, senior citizens on limited budgets, and others on marginal incomes. There are an estimated 35 million in our country that have no insurance coverage at all. Some of these can well afford medical care and choose to go bare, but others can't afford coverage.

We are currently exploring methods to help senior citizens who do not get adequate coverage under Medicare. I realize many of our seniors are capable of paying the balance. But some have severely restricted budgets and find that even the Medicare fee differential will create barriers to their getting care. It is our hope that we can expand a program that identifies seniors who are at this critical level. They, in turn, will be given a list of doctors and hospitals that will agree to see these patients, allowing forgiveness of the Medicare balance.

In this time of increasingly limited financial resources, physicians are asked to provide more, yet give quality care. This will be increasingly difficult. But it is important that we see that as long as we're financially able, we insure no one goes without care.

Since this is my last letter, I wish to thank Dr. Elaine Nye for her assistance and patience with my letters.

We are blessed with an excellent association and staff. I urge your continued support. We must continue to work together.

I wish to thank you for allowing me to represent you this past year. It's been an honor and a privilege.

I am proud and pleased to present to you Dr. Elizabeth (Peggy) Craig, the first woman president of the Minnesota Medical Association. She's a very charming lady and superb physician. You'll be proud of her. She will represent us well. Please welcome Dr. Peggy Craig.

Thomas G. Briggs M.D.

Thomas G. Briggs, M.D.
President
Minnesota Medical Association

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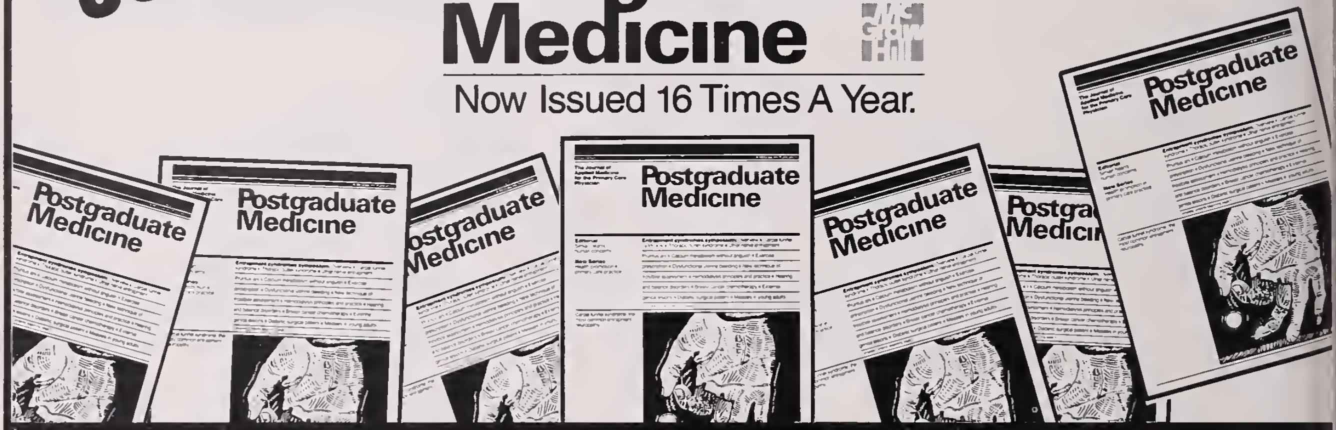

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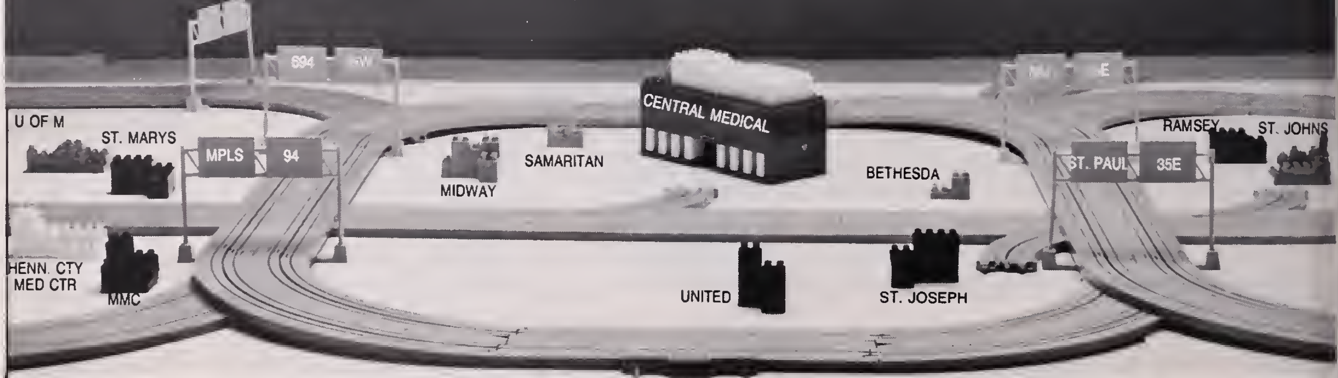

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Editor's Notebook

Straight Talk about Money and MINNESOTA MEDICINE: Annual Report of the Editor to the House of Delegates of the Minnesota Medical Association

As members of the House of Delegates of the Minnesota Medical Association, you are aware MINNESOTA MEDICINE represents a sizable expense for this organization. Consider next year's budget projections. The Association anticipates a budget of just over $2 million. The journal's share will be $168,500.

Of that $168,500, the journal will raise $103,500. Its sources of revenue will be: local advertising $45,000, national advertising $32,000, classified advertising $13,750, reprints $4,350, and nonmember subscriptions $8,000. That leaves $64,500, which we will ask from you.

The Question You Must Answer

The $64,500 question you must answer is: "Is MINNESOTA MEDICINE worth that much for you and the physicians we represent?" I believe it is. That sum works out to $12.50 a member a year, or $1.08 a month. If your answer is Yes, thank you. If your answer is No, the Board of Editors and myself will cut back on our plans for next year. We hope cutting isn't necessary.

Cutting Suggestions

Have we received suggestions for cutting? Yes, we have. These include: rid yourselves of your colored covers, reduce yourselves to a business bulletin, gut yourselves of scientific material, and consign yourselves to the role of a message-bearer for politicians and staff members.

Because I conceive of the journal as a haven for esthetic and scientific values, I have resisted these suggestions. I shall continue to do so. I have this private conviction: I believe you like to read what your colleagues are doing scientifically and how they are handling ethical dilemmas of cost-cutting without sacrificing quality, not just what your competitors are doing on multiple competitive battlefronts. We may be at the edge of the abyss of the Commercialism of Medicine, but the Profession has not fallen over the cliff to become a wholly-owned subsidiary of Business. Not yet, anyway.

Changing the Appearance of MINNESOTA MEDICINE

It has also been suggested we change the journal's appearance. How? By paying more attention to graphics, to typesetting, and to featuring complete issues devoted to survival matters for Medicine.

By doing these things, it is reasoned, you may get more bang, or at least more attention, for your buck. No doubt about it. The appearance of MINNESOTA MEDICINE can be improved by modern graphic techniques and by new printing technologies. But applications of these wonders merely "slick up" the journal, I am not convinced, although I can be persuaded, if they will enhance our readability or impact — or the bottomline.

And yes, we ought to devote more time, thought, and resources to putting out special issues dealing with the malpractice crisis, challenges of HMOs and related organizations, prospective payments for hospitals and physicians, joint venture activities, academic problems of academic medicine, and thorny conflicts of costs and ethics. But keep this fiscal fact in mind. Special issues, especially those with contributions from professionals from other disciplines, require more time, money, and effort. As Editor and steward of your funds, one of my roles it to see we don't spend your money foolishly on high-sounding but hard to do projects.

Inserting the Monitor

Lastly, the suggestion has been put forth that we staple or otherwise enclose the MONITOR inside the covers of MINNESOTA MEDICINE. At its meeting of April 26, 1985, the Board of Editors voted against the enclosure of the MONITOR with MINNESOTA MEDICINE. The Board of Editors feel each publication should stand on its own merits.

Straight Talk

The time has come to talk straight about money and doctors. Minnesota physicians are concerned, anxious, and uncertain about their present and future incomes. Your financial resources and your patience for dues-paying are not unlimited. As you see it, the trends — accelerating delivery of inpatient and outpatient care in a competitive corporate environment, increasing pressures by business and government to slash costs without sacrificing quality, and the unending gush of new physicians out of training pipelines — cast clouds over your economic horizons.

You are realists. You have heard that one-third of Minnesota physicians will lose one-third of their income and that three-fourths of Twin Cities' physicians would not recommend Medicine as a career to their offspring. You want your dues money to be accounted for and to be spent responsibly.

Given this desire for prudence, we at MINNESOTA MEDICINE have tried to act accordingly. We have kept our staff lean, moved our typing function inhouse on our own word processors, formalized our managing and planning, and consolidated the printing of the journal with other printing jobs of the Association by enlisting the services of a single printer. At MINNESOTA MEDICINE, we plan to spend your money the old-fashioned way: wisely. After all, you earned it.

Richard L Reece MD

Evaluation of the Hypotonic or Floppy Infant

BARRY J. BERGEN, M.D.*

Congenital hypotonia is a symptom that may have a number of causes. Determining these causes can tax the most astute physician. By using a few clinical criteria, congenital hypotonia can be divided into broad categories. With appropriate investigation, neuromuscular causes can usually be differentiated from non-neuromuscular causes.

THE CLINICIAN IS often faced with an infant who is hypotonic or ''floppy.'' Hypotonia is associated with a variety of apparently unrelated conditions. It can, however, be subdivided into broad categories by using a few clinical criteria. Investigation can then be directed towards the most likely etiology.

This paper presents a practical clinical approach to the recognition and diagnosis of the floppy or hypotonic infant. The causes are reviewed with emphasis placed on disorders of the neuromuscular system.

Assessment of Hypotonia

The hypotonic infant has been aptly compared to a rag doll. The rag doll mimics the clinical features we associate with hypotonia: (1) diminished resistance of the joints to passive movements, (2) increased range of motion of joints, i.e. hip abduction, elbow extension, (3) the assumption of bizarre or unusual postures.

The diagnosis of hypotonia is often based on the ''feel'' of the infant when held, the resistance of the limbs to passive movement and the postures the infant adopts. Two maneuvers or positions are helpful in objectively assessing tone: ventral suspension and traction on the hands when the infant is supine. In

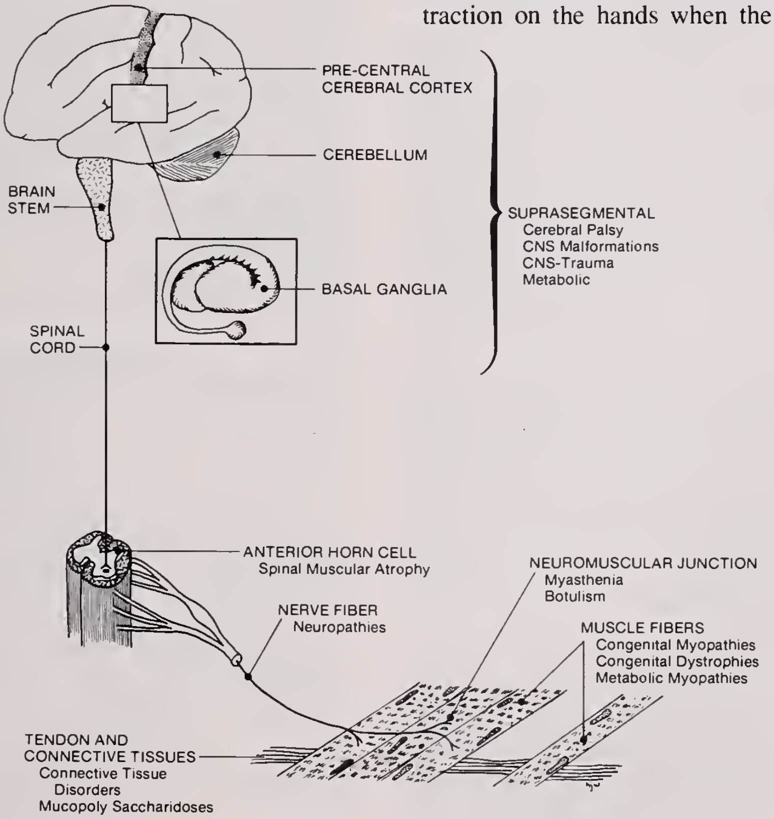

Fig. 1 — Anatomical approach to disorders producing hypotonia.

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*Department of Neurology, Park Nicollet Medical Center, Minneapolis, Minnesota.

ventral suspension, the infant is supported in a prone position with the hand. The position of the head and limbs and the trunk curvature are observed. Identical observations are made when traction is applied to lift the infant off the bed by the hands.

Differential Diagnosis

Hypotonia is difficult to classify purely on anatomical, pathologic or biochemical terms. Also the effects of the nervous system on tone can vary with age and maturation. If the clinician focuses attention on weakness rather than on tone, differential diagnosis is made simpler by dividing cases of hypotonia into two broad categories: (1) Those cases accompanied by muscle weakness (paralytic) disorders. This encompasses lower motor neuron lesions. (2) Those cases in which strength is normal or minimally reduced (non-paralytic). This includes upper motor neuron disorders.

Figure 1 illustrates the anatomy of this division. Upper motor neuron lesions reflect disorders of systems impinging on or influencing the anterior horn cell. The lower motor neuron lesions involve those disorders affecting the anterior horn cell, its axon, the neuromuscular junction and the muscle fibers innervated by that axon. Neurologic disorders of the lower motor neuron are indicated.

Babies cannot cooperate in tests of strength. Therefore, the assessment of strength or motor power in the infant is based largely on observation. The infant who lifts and holds the head and limbs against gravity is unlikely to have significant weakness. Limb strength can be determined by holding the limbs as the infant moves about, by assessing the strength of withdrawal of the limbs to noxious stimuli and by observing the infant's ability to support the body on outstretched legs or hands.

Hypotonic infants can usually be divided readily into paralytic (weak) and non-paralytic groups. However, some infants who are profoundly hypotonic appear to be mildly weak. The degree of hypotonia is ordinarily related to the amount of weakness. In disorders of the lower motor neuron the weakness is in proportion to the hypotonia, but in upper motor neuron lesions the hypotonia is proportionately more severe than the weakness.

Table 1 summarizes the clinical distinction of upper motor neuron (non-paralytic) lesions from lower motor neuron (paralytic) disorders. Upper motor neuron lesions in neonates and infants usually result in hypotonia. This typically evolves into spasticity in older infants and children. Spasticity may, however, be seen in the first few months of life.

Deep tendon reflexes can be of value in the differential diagnosis. They are often reduced or absent in lower motor neuron disorders and normal or increased in upper motor neuron lesions. Abnormal reflexes (i.e. clonus, extensor/plantar responses) and a persistent or exaggerated Moro or tonic neck reflex suggests upper motor neuron disorders.

Examination by palpation of the muscle mass is usually unrewarding in the infant. Atrophy is seldom detectable. Fasciculation of the tongue may be seen in spinal muscular atrophy, but can be difficult to distinguish from tremor.

Infant development can be considered in terms of gross and fine motor skills, social-adaptive functions and language skills. Lower motor neuron or paralytic lesions impair gross motor performance and may impair fine motor functions if weakness is moderate or severe. Insults to the central nervous system affect all

TABLE 1
Differentiation Between Upper Motor Neuron and Lower Motor Neuron Disease

Upper Motor Neuron		Lower Motor Neuron
	Tone	
Hypotonia (infants) or spasticity (infants and older children)		Hypotonia
	Strength	
Normal or slightly decreased		Weak
	Reflexes	
Increased deep tendon reflexes Abnormal reflexes (Babinski sign, ankle clonus, etc.) Persistence of infantile reflexes		Decreased or absent tendon reflexes No abnormal reflexes
	Muscle Mass	
Usually no atrophy		Atrophy (but often not detectable in infants) Fasciculations (usually not detectable in infants but may be seen in tongue)
	Development	
Delay in all spheres of development		Delay in gross motor skills Normal social adaptive and fine motor skills
	Historical Data and General Examination	
Indicate events or signs and symptoms involving the CNS		
	Laboratory Studies	
CT, EEG, etc.		CK, electroneuromyogram, muscle or nerve biopsy

spheres of development. Assessing development is relatively easy in the older infant, but can be difficult in the early weeks and months of life. Abnormal central nervous system function can be suspected if the infant is not alert, does not focus or follow with the eyes, does not smile or vocalize and does not perform expected motor tasks (i.e. reaching) in spite of normal strength. A careful search is necessary for events such as birth asphyxia or ischemia that might produce upper motor neuron dysfunction.

Hypotonia without Significant Weakness

Hypotonia can be associated with mental deficiency of no apparent etiology, as well as with specific causes of mental retardation such as Down's syndrome (Table 2). The hypotonia may be proportionate to the degree of mental subnormality, but sometimes the hypotonia is quite marked with only mild mental retardation.

TABLE 2
Suggested Classification of the Hypotonic Infant

- **I. Hypotonia without Significant Weakness**
  - **A. Disorders of the central nervous system**
    - **1. Non-specific mental deficiency**
    - **2. Hypotonic cerebral palsy**
    - **3. Metabolic disorders: abnormalities of amino acid and organic acid metabolism, abnormalities of mucopolysaccharide metabolism, lipidoses**
    - **4. Down's syndrome**
    - **5. Birth trauma, intracranial hemorrhage, anoxia**
  - **B. Hypotonia-obesity syndrome (Prader-Willi)**
  - **C. Connective tissue disorders: congenital laxity of the ligaments; Marfan's syndrome; Ehlers-Danlos syndrome; osteogenesis imperfecta; arachnodactyly**
  - **D. Metabolic, nutritional, endocrine: hypercalcemia, renal tubular acidosis, rickets, celiac disease, hypothyroidism**
  - **E. Acute illness: infection, dehydration**
  - **F. Miscellaneous: congenital heart disease**
  - **G. Benign congenital hypotonia; "essential hypotonia"**
- **II. Weakness with Incidental Hypotonia**
  - **A. Proximal spinal muscular atrophies: neurogenic atrophies**
    - **1. Infantile spinal muscular atrophy (Werdnig-Hoffmann's Disease)**
    - **2. Benign variants**
  - **B. Congenital myopathies**
    - **1. Structural: central core disease, minicore disease, nemaline myopathy, myotubular myopathy, mitochondrial myopathies, congenital fiber type disproportion, non-specific or "minimal change" myopathy**
    - **2. Metabolic: glycogenoses, lipid storage myopathy, periodic paralysis**
  - **C. Other neuromuscular disorders**
    - **1. Congenital muscular dystrophy**
    - **2. Congenital myotonic dystrophy**
    - **3. Myasthenia gravis**
    - **4. Periodic paralysis**
    - **5. Polymyositis**
    - **6. Peripheral neuropathies**

Cerebral palsy is usually characterized by spasticity or hypertonia, but may be associated with hypotonia, especially in the early phases. The diagnosis of hypotonic cerebral palsy should be restricted to those hypotonic infants who have exaggerated tendon reflexes or ankle clonus or other features suggestive of cerebral palsy such as choreoathetosis and ataxia.[1]

Hypotonia can be a symptom of a wide variety of metabolic disorders involving amino-acid, carbohydrate, lipid, mucopolysaccharide, and protein metabolism. The manifestations of central nervous system involvement usually include mental retardation, but associated symptoms are variable.

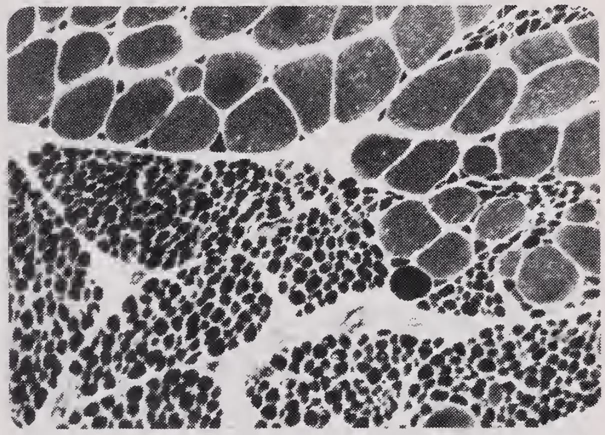

Fig. 2 — Muscle biopsy of a patient with severe infantile spinal muscular atrophy. Classical picture of group atrophy with clusters (often whole fascicles) of uniformly atrophic fibers interspersed with isolated fibers or groups of normal-sized or enlarged fibers. These enlarged fibers usually stain of uniform type. Adenosinetriphosphatase (ATPase) stain (pH 9.6).

The syndrome of hypotonia-hypomentia-hypogonadism-obesity (HHHO) or Prader-Willi syndrome usually presents with severe hypotonia at birth and with feeding difficulty.[2]

Many of the connective tissue disorders (i.e. Marfan's syndrome, Ehlers-Danlos syndrome, osteogenesis imperfecta, mucopolysaccharidosis) are associated with joint laxity, hypotonia and delay in achieving motor milestones.[3]

The term benign congenital hypotonia is applied to a group of infants with hypotonia without underlying muscle or central nervous system disease. In these infants, motor power, electrodiagnostic studies and muscle biopsy (if performed) are normal.

Weakness with Incidental Hypotonia

Spinal Muscular Atrophy

Based on severity, spinal muscular atrophy is divided into severe (Werdnig-Hoffmann), moderate, and mild categories (Table 2). Severe infantile spinal muscular atrophy or Werdnig-Hoffmann disease is the commonest cause of hypotonia with muscle weakness. This disorder typically has its onset in the first two to three months of life, but may occur in utero. Weakness is generalized with involvement of bulbar and respiratory muscles. Facial strength is usually preserved. Fasciculations may be noted in the tongue. Sometimes a tremor of the hands is noted. Tendon reflexes are always absent. Mild contractures may occur, but severe contractures are not seen. Death is usual in the first year of life due to respiratory failure and intercurrent pneumonia. Electrodiagnostic studies may provide supportive evidence, but the only certain method of diagnosis is with muscle biopsy (Figure 2).

The intermediate form of spinal muscular atrophy can present as a floppy infant. The onset of symptoms is usually between six and 18 months of age. Muscle power tends to remain unchanged and in some cases there may be improvement. The face is spared and there are no bulbar symptoms. Survival is into adolescence and adult life. The serum creatine kinase (CK) may be mildly elevated. Muscle biopsy is similar to that seen in severe infantile spinal muscular atrophy.

The mild form of spinal muscular atrophy does not present as the flopppy infant. Weakness is usually not clinically apparent until the age of four to 12 years.

Congenital Myopathies

A myopathy refers in a strict sense to any pathologic process affecting muscle. A dystrophy is distinguished from the congenital myopathies largely on the basis of histologic changes. A dystrophic muscle biopsy is characterized by muscle fiber degeneration and regeneration with excessive lipid and fibrous tissue. In the structural myopathies, "dystrophic" changes are usually minimal and specific structural features are identified (Figures 3 through 6).[4]

Weakness in the congenital myopathies can be proximal or distal. It may be progressive, but is often stable. Strength may in fact improve. Skeletal abnormalities (kyphoscoliosis, contractures, hip dislocation and foot deformity) can be seen in all the congenital myopathies.

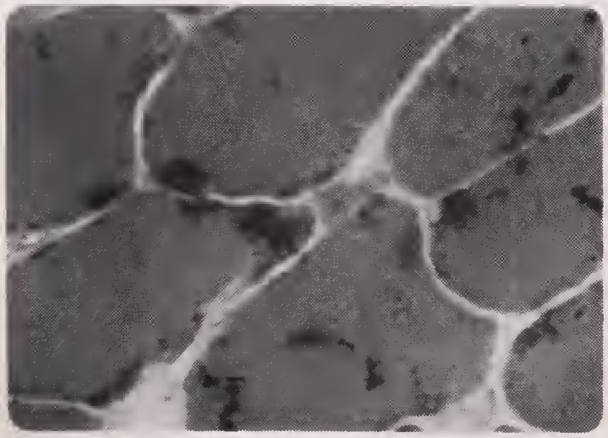

Fig. 3 — Nemaline or "Rod Body" myopathy. Irregular dark staining rod bodies are seen with a trichrome stain.

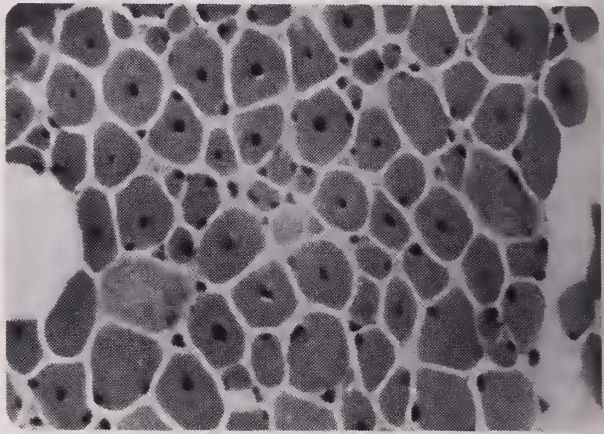

Fig. 4 — Myotubar myopathy. There is excessive variation in fiber size and prominent internal nuclei, often centrally placed, are seen in many of the muscle fibers. Hematoxylin and eosin stain.

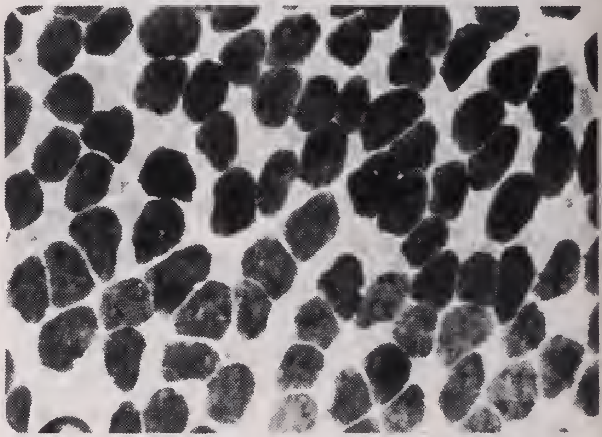

Fig. 5 — Congenital fiber type disproportion. The type I fibers (light staining) are numerous and excessively small. Type II fibers (dark staining) are normal in size. ATPase stain (pH 9.4).

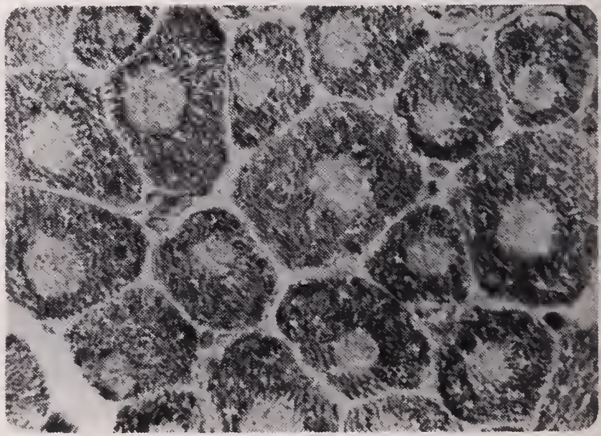

Fig. 6 — Central core. A central zone of absent or reduced staining is seen in almost all the muscle fibers. Nicotinamide-adenine dinucleotide-tetrayslium reductase stain.

Serum creatine kinase and electromyography are unlikely to be helpful in the differential diagnosis of the congenital myopathies. CK is usually normal. (Increased levels are suggestive of congenital muscular dystrophy.) Electromyography may reveal small-amplitude brief-duration polyphasic potentials.

Some infants with hypotonia and weakness show no changes on muscle biopsy or show changes that are "nonspecific" or minimal. These minimal changes include excessive variation in fiber size or an abnormality in the proportion or size of one fiber type (Figure 7).

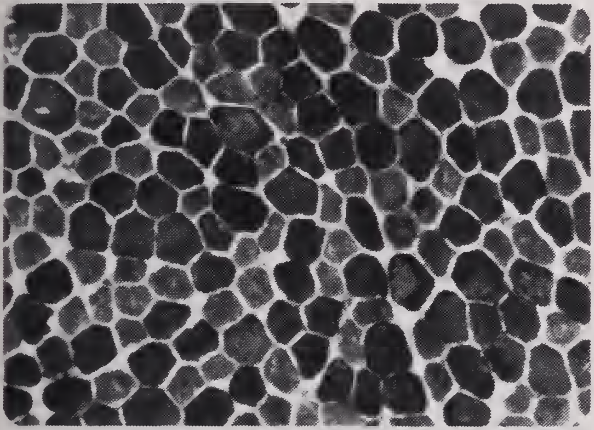

Fig. 7 — Possible congenital muscular dystrophy. Muscle biopsy of a 9-month old female who was hypotonic at birth. Tone and strength had improved since birth. Could now sit and stand unaided. CK 490 iu/1. On routine stains a few enlarged, dark staining fibers were seen. On ATPase stain (pH 9.4) some of the type II (dark staining) fibers were excessively large.

Metabolic Myopathies

The most frequent glycogenoses producing the floppy infant is acid maltase (Pompe's disease). It is a generalized disease involving the liver, heart, skeletal muscle, kidneys and central nervous system.[5] A rapidly progressive myopathy due to muscle myophosphorylase deficiency and leading to death had been reported in infancy.[6] Carnitine deficiency can present as a floppy infant.[7] The muscle biopsy shows excess lipid storage (Figure 8).

Other Neuromuscular Disorders

Infants with congenital muscular dystrophy present with weakness, usually associated with hypotonia and with a muscle biopsy showing dystrophic changes (Figure 9). Joint contractures are common and the infant may have the clinical picture of arthrogryposis. CK is usually increased at least in the early stages. Weakness tends to be static and some infants may improve with time.[8,9] One type of congenital muscular dystrophy is associated with central nervous system abnormalities.[10]

The neonate with myotonic dystrophy may have severe weakness requiring respiratory support. Bulbar symptoms are common and contractures may be severe enough to produce an arthropypotic picture. Strength gradually improves, but facial weakness persists. Mental retardation is common. The mother is almost invariably the affected parent.[11]

Myasthenia can present as a transient disorder in an infant of a myasthenic mother. Congenital myasthenia in infants of non-myasthenic mothers is usually characterized by a mild degree of weakness, often limited to the extraocular muscles. However, a severe familial infantile form has been described with onset at birth or shortly thereafter.[12]

Acquired peripheral neuropathies (poliomyelitis and polyneuropathy) in infancy have an acute or subacute onset. Hereditary motor sensory neuropathies (HMSN) types I & II (peroneal muscular atrophies) and type III (Dejerine-Sottas) can present in infancy but usually do so by mild weakness and delay in motor milestones rather than the floppy infant syndrome.[13]

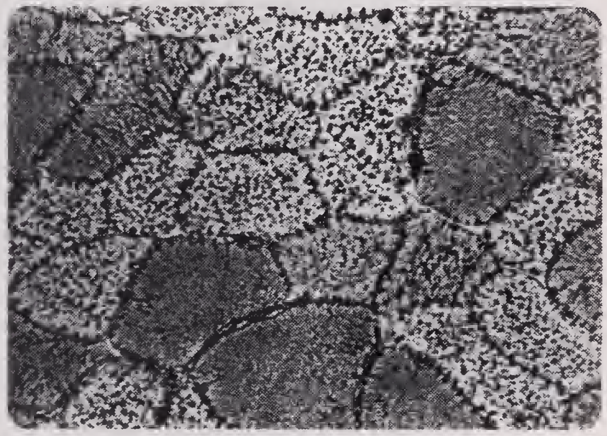

Fig. 8 — Excessive accumulation of lipid (dark staining globules) is seen in this Sudan Black stain.

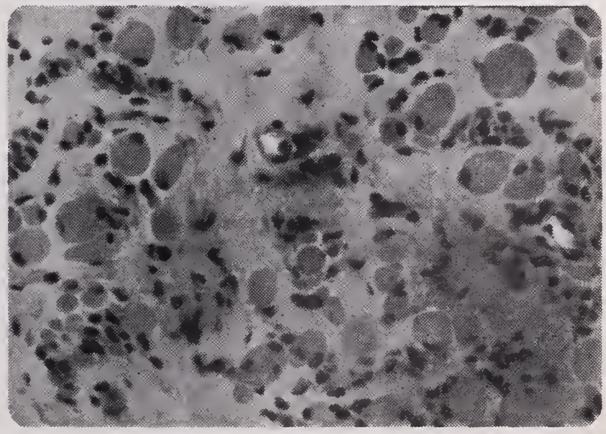

Fig. 9 — Congenital muscular dystrophy. There is marked loss of muscle fibers and extensive replacement by fat and connective tissue.

Diagnostic Approach

In those infants who are weak, investigation is directed towards disorders of the neuromuscular system. In infants who are not weak, diagnostic possibilities are greater and investigation is tailored towards the most likely clinical entity (Figure 10).

Certain clinical features may be helpful in the differential diagnosis of the hypotonic infant. These are described in Table 3.

A "wait-and-see" attitude is sometimes adopted by physicians when a clinical diagnosis is uncertain and the physician is reluctant to pursue more aggressive investigation. This may be appropriate in the clincial assessment of the hypotonic infant who is *not* weak if initial studies are unrevealing and the infant is improving. The clinician must note that improvement in strength and tone can occur in congenital myopathies or dystrophies. The parents must be counseled if an inherited disorder is suspected.

Laboratory Studies

In the investigation of neuromuscular disorders, three studies are of most value.

Electromyography and Nerve Conduction Velocity Measurements

These are *routine* procedures in the evaluation of the hypotonic infant. The electromyogram (EMG) and the assessment of motor nerve conduction velocity (MNCV) are simple, rapid and safe procedures in the hands of the experienced electromyographer.

In electromyography a needle is inserted into the muscle providing a recording of the spontaneous and voluntary electrical activity of motor units. This procedure can be performed readily in infants and the pattern of activity can usually distinguish neurogenic from myopathic disorders. Nerve conduction velocity measurements are obtained by stimulating the nerve with surface electrodes at two points along the course of the nerve. A slowing in conduction velocity indicates a demyelinating peripheral neuropathy. In neuropathies affecting primarily the axon, the nerve conduction velocity may be normal.

TABLE 3

Clinical Features Used in Differential Diagnosis of the Hypotonic Infant

Observation	Diagnosis Indicated
Hypotonia with sucking and/or swallowing difficulties in the newborn period	Severe infantile spinal muscular atrophy Congenital myotonic dystrophy Prader-Willi syndrome Myasthenia gravis Birth trauma
Hypotonia with facial weakness	Congenital myotonic dystrophy Myotubular myopathy Myasthenia gravis Congenital muscular dystrophy
Hypotonia with external ophthalmoplegia	Mitochondrial myopathy Myotubular myopathy Myasthenia gravis Congenital muscular dystrophy
Hypotonia with arthrogryposis	Congenital muscular dystrophy Congenital myotonic dystrophy Denervation syndromes

Serum Enzymes

Creatine kinase is elevated in destructive or degenerative muscle disorders. It is normal in the majority of congenital myopathies and denervating disorders. If the CK is increased in the infant with hypotonia, this suggests a diagnosis of congenital muscular dystrophy.

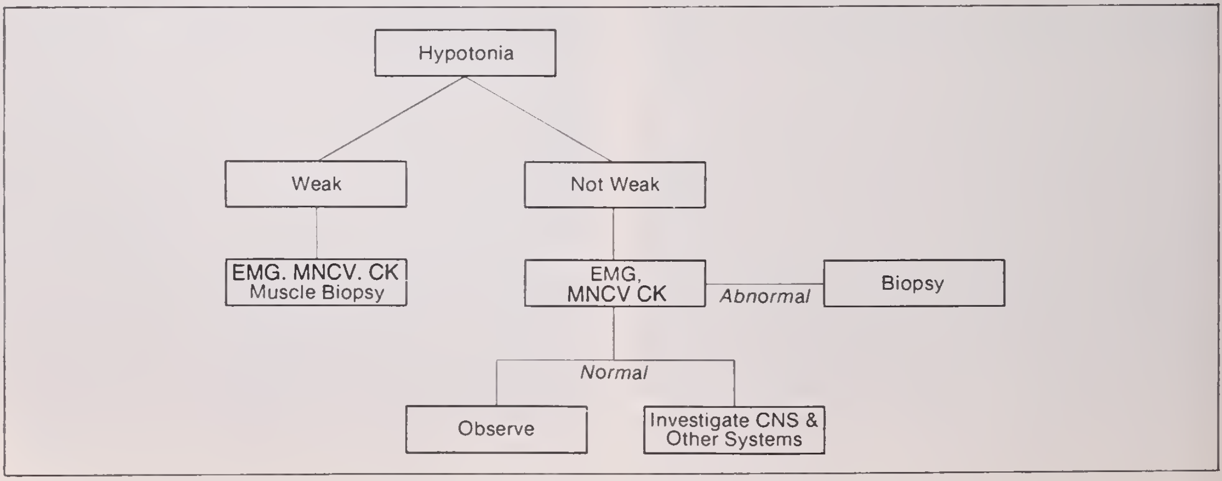

Fig. 10 — Clinical approach to the hypotonic infant.

Muscle Biopsy

This is the most definitive test in the floppy infant with associated muscle weakness. This procedure is readily done under local anesthesia and intramuscular sedation. Communication with the laboratory is essential to ensure that an appropriate piece of muscle is obtained and that the muscle tissue is properly handled.

Analyses of muscle tissue must include a battery of enzyme histochemical stains. Routine histological stains will not detect some of the structural and metabolic myopathies. Electron microscopy (EM) is a useful additional tool in the recognition of some of the congenital myopathies. It is time consuming and expensive and is not always necessary. A piece of muscle for EM should, however, be obtained routinely so that sections can be taken if indicated after the light microscopy studies are completed.

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Hearing Screening

The Minnesota Department of Health has revised its manual and recommendations for preschool and school-age hearing screening.

These hearing screening recommendations were reviewed and approved by a twelve-member committee representing: Minnesota Academy of Otolaryngology/HNS, Minnesota Academy of Pediatrics, Minnesota Academy of Family Physicians, Subcommittee on Screening — Minnesota Medical Association, Audiology — Mayo Clinic, Minnesota Speech-Language-Hearing Association, Public Health Nursing, School Nursing, Special Education — Minnesota Department of Education, and the Hearing Conservation Committee — Minnesota Academy of Otolaryngology.

The recommendations are:

1. Screening at 25 dB at 500 Hz, and 20 dB at 1000, 2000 and 4000 Hz. When tympanometry is used, 500 Hz may be omitted (refer to Tympanometry Recommendations for Screening, Minnesota Department of Health and Minnesota Department of Education).
2. A referral for medical/audiological evaluation is recommended for any child whose threshold in either ear on rescreening is 25 dB or poorer at 500 Hz or 4000 Hz, or 20 dB or poorer at 1000 Hz or 2000 Hz.
3. When the only frequency that meets referral criteria is 4000 Hz, the following options should be given to the parent/guardian: medical referral; audiological evaluation; counseling on hearing protection; and/or monitoring the loss every six months. Medical referral or audiological evaluation is encouraged if there is a 10 dB worsening of the threshold on monitoring audiograms.

Copies of the *Preschool and School Hearing Screening Manual,* as well as copies of *Tympanometry Recommendations for Screening* maybe requested from the Hearing and Vision Conservation program, Minnesota Department of Health, 717 Delaware Street S.E., P.O. Box 9441, Minneapolis, MN 55440, or by calling (612) 623-5288.

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INDICATIONS AND USAGE: These preparations are indicated for the treatment of infections caused by susceptible strains of designated microorganisms as follows: Respiratory Tract Infections (e.g., tonsillitis, pharyngitis, and lobar pneumonia) due to *S. pneumoniae* (formerly *D. pneumoniae*) and group A beta-hemolytic streptococci [penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever; Velosef (Cephradine, Squibb) is generally effective in the eradication of streptococci from the nasopharynx; substantial data establishing the efficacy of Velosef in the subsequent prevention of rheumatic fever are not available at present]; Otitis Media due to group A beta-hemolytic streptococci, *H. influenzae*, staphylococci, and *S. pneumoniae*; Skin and Skin Structures Infections due to staphylococci and beta-hemolytic streptococci; Urinary Tract Infections, including prostatitis, due to *E. coli*, *P. mirabilis*, *Klebsiella* species, and enterococci (*S. faecalis*).

Note: Culture and susceptibility tests should be initiated prior to and during therapy.

CONTRAINDICATIONS: In patients with known hypersensitivity to the cephalosporin group of antibiotics.

WARNINGS: *Use cephalosporin derivatives with great caution in penicillin-sensitive patients since there is clinical and laboratory evidence of partial cross-allergenicity of the two groups of antibiotics; there are instances of reactions to both drug classes (including anaphylaxis after parenteral use).* In persons who have demonstrated some form of allergy, particularly to drugs, use antibiotics, including cephradine, cautiously and only when absolutely necessary.

Pseudomembranous colitis has been reported with the use of cephalosporins (and other broad spectrum antibiotics); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with antibiotic use. Treatment with broad spectrum antibiotics alters normal flora of the colon and may permit overgrowth of clostridia. Studies indicate a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind the toxin *in vitro*. Mild cases of colitis may respond to drug discontinuance alone. Manage moderate to severe cases with fluid, electrolyte and protein supplementation as indicated. Oral vancomycin is the treatment of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile* when the colitis is severe or is not relieved by drug discontinuance; consider other causes of colitis.

PRECAUTIONS: General: Follow patients carefully to detect any side effects or unusual manifestations of drug idiosyncrasy. If a hypersensitivity reaction occurs, discontinue the drug and treat the patient with the usual agents, e.g., pressor amines, antihistamines, or corticosteroids. Administer cephradine with caution in the presence of markedly impaired renal function. In patients with known or suspected renal impairment, make careful clinical observation and appropriate laboratory studies prior to and during therapy as cephradine accumulates in the serum and tissues. See package insert for information on treatment of patients with impaired renal function. Prescribe cephradine with caution in individuals with a history of gastrointestinal disease, particularly colitis. Prolonged use of antibiotics may promote the overgrowth of nonsusceptible organisms. Take appropriate measures should superinfection occur during therapy. Indicated surgical procedures should be performed in conjunction with antibiotic therapy.

Information for Patients: Caution diabetic patients that false results may occur with urine glucose tests (see PRECAUTIONS, Drug/Laboratory Test Interactions). Advise the patient to comply with the full course of therapy even if he begins to feel better and to take a missed dose as soon as possible. Tell the patient he may take this medication with food or milk since G.I. upset may be a factor in compliance with the dosage regimen. The patient should report current use of any medicines and should be cautioned not to take other medications unless the physician knows and approves of their use (see PRECAUTIONS, Drug Interactions).

Laboratory Tests: In patients with known or suspected renal impairment, it is advisable to monitor renal function.

Drug Interactions: When administered concurrently, the following drugs may interact with cephalosporins:

Other antibacterial agents — Bacteriostats may interfere with the bactericidal action of cephalosporins in acute infection; other agents, e.g., aminoglycosides, colistin, polymyxins, vancomycin, may increase the possibility of nephrotoxicity.

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Pediatric Use: Adequate information is unavailable on the efficacy of b.i.d. regimens in children under nine months of age.

ADVERSE REACTIONS: Untoward reactions are limited essentially to G.I. disturbances and, on occasion, to hypersensitivity phenomena. The latter are more likely to occur in persons who have previously demonstrated hypersensitivity and those with a history of allergy, asthma, hay fever, or urticaria.

The following adverse reactions have been reported following use of cephradine: G.I. — Symptoms of pseudomembranous colitis can appear during antibiotic therapy; nausea and vomiting have been reported rarely. Skin and Hypersensitivity Reactions — mild urticaria or skin rash, pruritus, joint pains. Hematologic — mild transient eosinophilia, leukopenia and neutropenia. Liver — transient mild rise of SGOT, SGPT, and total bilirubin with no evidence of hepatocellular damage. Renal — transitory rises in BUN have been observed in some patients treated with cephalosporins; their frequency increases in patients over 50 years old. In adults for whom serum creatinine determinations were performed, the rise in BUN was not accompanied by a rise in serum creatinine. Others — dizziness, tightness in the chest, and candidal vaginitis.

DOSAGE: Adults — For respiratory tract infections (other than lobar pneumonia) and skin and skin structure infections: 250 mg q. 6 h or 500 mg q. 12 h. For lobar pneumonia: 500 mg q. 6 h or 1 g q. 12 h. For uncomplicated urinary tract infections: 500 mg q. 12 h; for more serious UTI, including prostatitis, 500 mg q. 6 h or 1 g q. 12 h. Severe or chronic infections may require larger doses (up to 1 g q. 6 h). For dosage recommendations in patients with impaired renal function, consult package insert.

Children over 9 months of age — 25 to 50 mg/kg/day in equally divided doses q. 6 or 12 h. For otitis media due to *H. influenzae*: 75 to 100 mg/kg/day in equally divided doses q. 6 or 12 h but not to exceed 4 g/day. Dosage for children should not exceed dosage recommended for adults. There are no adequate data available on efficacy of b.i.d. regimens in children under 9 months of age.

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V/Q Scintigraphy in the Diagnosis of Pulmonary Emboli*

Current Status

MERLE K. LOKEN, M.D., Ph.D.†

The perfusion lung scan (Q) together with an assessment of ventilation (V) continue to be the initial diagnostic tests of choice to establish the diagnosis of pulmonary emboli. This presentation reviews the optimal techniques for V/Q assessment.

IT HAS BEEN ESTIMATED that there are more than 600,000 new cases of pulmonary embolism (P.E.) in the U.S.A. each year and that the correct diagnosis is made in only 25% of them[1] Because the mortality for untreated P.E. is about 30%, there is great need for reliable, preferably noninvasive, methods to correctly diagnose this condition. Unfortunately the signs and symptoms of P.E. are usually vague and nonspecific. As seen in Table 1[2,3] dyspnea and chest pain are the most common symptoms reported by patients with P.E., where tachypnea and focal rales are the most common physical signs. As is indicated above all of these symptoms and signs are nonspecific and may be observed in a variety of cardiopulmonary problems. The clinical evaluation of P.E. is further hampered by incomplete information relative to the incidence of this abnormality in various populations. This information is of importance in order to apply probability criteria (Bayes' theroem) appropriately[4]. Laboratory tests including arterial blood gas determinations cannot discriminate patients with P.E. from those with other disorders. Likewise the EKG is an unreliable indicator of P.E. although it is useful in the diagnosis of cardiac dysfunction which may mimic P.E.

For many years the chest radiograph was the only imaging technique available for the diagnosis of P.E. Clinical experience as well as a variety of reports and literature indicate very clearly that the chest film is not a reliable means for the diagnosis of P.E.[5,6]. Nonetheless the chest radiograph remains an integral part of our diagnostic scheme for P.E. together with scintigrams of lung perfusion (Q) and ventilation (V). These V/Q scans reflect a characteristic physiologic derangement in P.E. In this case there is a characteristic mismatch, i.e., ventilation of non-perfused lung segments. When this finding is present, the diagnosis of P.E. can be made with essentially absolute assurance. Likewise when the Q scan is normal the probability of P.E. is essentially zero. It is generally agreed that pulmonary angiography should be reserved for those instances in which the V/Q data lie

TABLE 1
Signs and Symptoms in Pulmonary Embolism

	Sasahara et al.[2]	UPET[3]
Dyspnea	100%	81%
Pleuritic chest pain	55%	72%
Apprehension	—	59%
Cough	72%	54%
Hemoptysis	42%	34%
Tachypnea	—	92%
Diaphoresis	—	34%
Cyanosis	15%	18%
Rales	70%	53%
Thrombophlebitis	33%	33%

The triad of dyspnea, pleuritic chest pain, and hemoptysis was present in only 28% of patients studied in the UPET.[3].

TABLE 2

Normal:	Normal Q
High Probability of P.E.	Q defects much larger than CxR abnormalities 2 or more moderate** V/Q mismatches: CxR normal 1 or more large*** V/Q mismatches: CxR Normal
Low Probability Of P.E.:	Small* V/Q mismatches Focal V/Q matches: no corresponding CxR abnormality Q defects much smaller than CxR abnormalities
Indeterminate For P.E.:	Diffuse COPD — except where clear-cut mismatch is present matched CxR & Q defects Single moderate V/Q mismatch: no corresponding CxR abnormality

*Small = < 25% of anatomic segment
** = 25-75% of anatomic segment
*** = >75% of anatomic segment
CxR = chest radiograph

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*Presented at the Forty-seventh Annual Radiology Course, University of Minnesota Medical School, Minneapolis, MN, September 10-14, 1984.

†Professor and Director, Division of Nuclear Medicine, University of Minnesota Hospitals, Minneapolis, MN

between these clear cut limits. The diagnostic scheme shown in Table 2 is used in our clinic to determine the probability of P.E. This has been modified after the work of Biello and others[7,8].

Essentially all Q scintigrams are performed using macroaggregates of albumin (MAA) labeled with 99m-Tc. These particles normally range in size from 20-40 microns in diameter and have an average clearance half-time from the vascular bed of about 12 hours. Although such embolization is nonphysiological, it does not present clinical difficulties because the usual total number of particles is unlikely to exceed 200,000 per administration which will occlude, on a temporary basis, less than one in ten million of the available capillaries in the lungs.

The accuracy of Q scanning depends on employing proper techniques. The syringe containing the MAA (3-5 mCi) should be agitated slightly to ensure a relatively uniform suspension of particles at the time of administration. The patient should be placed in a supine position and instructed to breathe deeply during period of slow intravenous injection (5-10 seconds). Finally, care should be taken not to withdraw blood into the syringe at the time of injection as this might produce clumping and cause "hot spots" on the Q images.

The accuracy of Q scanning for the detection of P.E. has steadily increased through the years with various refinements in technique and with the incorporation of V scanning as part of the study. This latter addition is of importance because various ventilatory disorders [pneumonia, pneumothorax, carcinoma, obstructive pulmonary disease (OPD) etc] are known to produce significant perfusion defects on lung scans that are often quite similar in appearance to those seen with P.E. Presently most ventilatory studies performed for this purpose are carried out using 133-Xenon following the concepts of lung function developed by West and associates in 1957[9] who used scintillation probes and strip chart recorders for their measurement. After the scintillation (Anger) camera was introduced into our practice we moved promptly to link it with 133-Xe for evaluation of regional lung function[10,11].

Although the assessment of V with 133-Xe provides useful clinical information, it is generally limited to a single posterior view of the lungs. In order to achieve more accurate regional comparisons of V and Q, we recently shifted to the inhalation of aerosols for measurements of ventilation in a manner similar to that introduced by Taplin and associates[12]. We are using a 99m-DTPA solution and find this to be quite satisfactory as have others who are involved in similar studies[13]. We have investigated several methods for aerosol administration starting with the original Taplin technique as modified by Cadema products[14]. This permits satisfactory planar images of V but the efficiency of the aerosol delivery by this system has deterred us from using it for single photon emission computed tomography (SPECT). We currently use the Synaco device which we find produces droplets with an average size of 0.23 microns[15]. Such droplets permit uniform deposition of radioactivity throughout the lungs of patients breathing at maximal tidal capacity. In addition to measuring particle size we have found that by adding ethanol, 10% by volume, to the solution to be nebulized as a means of decreasing surface tension, increases the efficiency of delivery almost two fold. We find that the use of a single label, 99m-Tc, for both the aerosol and MAA portions of the study is not a deterrent to ascertain whether or not a V-Q mismatch exists, providing proper care is exercised when comparing these images on a regional basis using the various planar images. The utility of SPECT for these studies because of its unique capability of providing a three dimensional representation is currently under study.

Despite the obvious clinical utility of V/Q scintigraphy, some concerns have arisen concerning the efficacy of this procedure. The center of this controversy is the publication of Robin[16] in 1977 indicating that V/Q imaging produces a significant percentage of false positive studies leading to an overtreatment of apparent P.E. This article produced considerable reaction leading several investigators to undertake detailed studies to establish the clinical efficacy of lung scanning, to ascertain its cost effectiveness as well as to determine, once and for all, its appropriate place in diagnostic testing. Careful examination of Robin's data by colleagues at his own institution as well as by others show quite convincingly that Robin erred not only in the manner in which data were gathered but also in their analyses[17,18,19].

The issue of efficacy and cost effectiveness is receiving a great deal of attention at this time because of our need to exhibit a great cost consciousness in health care delivery. To properly address these issues it is necessary to use reasonably sophisticated probability theory as has been considered in detail by McNeil[20]. In this report involving 169 patients, she develops the concept of likelihood ratios based on clinical data as well as on scintigraphic patterns. She concludes that clinical estimates of disease are essential in making probabilistic estimates about the presence or absence of P.E. once a particular pattern has been obtained and that the role that these estimates play in the choice of therapy in a particular patient is non-trivial and somewhat complicated. It depends upon the referring physician's attitude toward anticoagulation of patients without P.E. and finally, toward the uses of angiography in all or a selected sub-group of patients.

A recent study by Saenger, et al. also provides important information on efficacy[21] as well as cost effectiveness[22] of lung scanning. Their manuscripts relating to this rather extensive work which includes data from 26 institutions with bed sizes ranging from 130-1200 beds are in the process of being published. After removal of some patient data because of incompleteness, a total of 2,023 cases contributed by 997 referring physicians were used to establish clinical efficacy. In summary form, this study showed:

1. There is not grouping of symptoms, signs and routine laboratory findings that are capable of predicting that a given patient does or does not have a reasonable probability of having P.E.
2. In the management of patients with and without P.E., the lung scan provided a simple and reliable method to indicate to the referring physician the likelihood of a patient having P.E.
3. The findings of lung scintigraphy had a significant impact on the care of patients with suspected P.E. (length of hospital stay, use of anticoagulate therapy, etc).

Likewise the Saenger study on the cost effectiveness of lung scans in the management of patients with P.E. produced some interesting results as summarized below:

1. A significant number of diagnostic studies are performed to reassure both patients and their physicians of the absence of disease. Thus the cost of procedures such as the V/Q scan must also be weighed against the benefit of ruling out a diagnosis of P.E.
2. For physicians, the added cost to health care delivery is justified, at least in part, by considerations of medical liability.
3. Based on survival figures of patients treated for P.E., and calculations of somatic and genetic radiation risks, the overall benefit/risk is more than 200 fold! Thus the V/Q scanning is both efficacious and cost effective.

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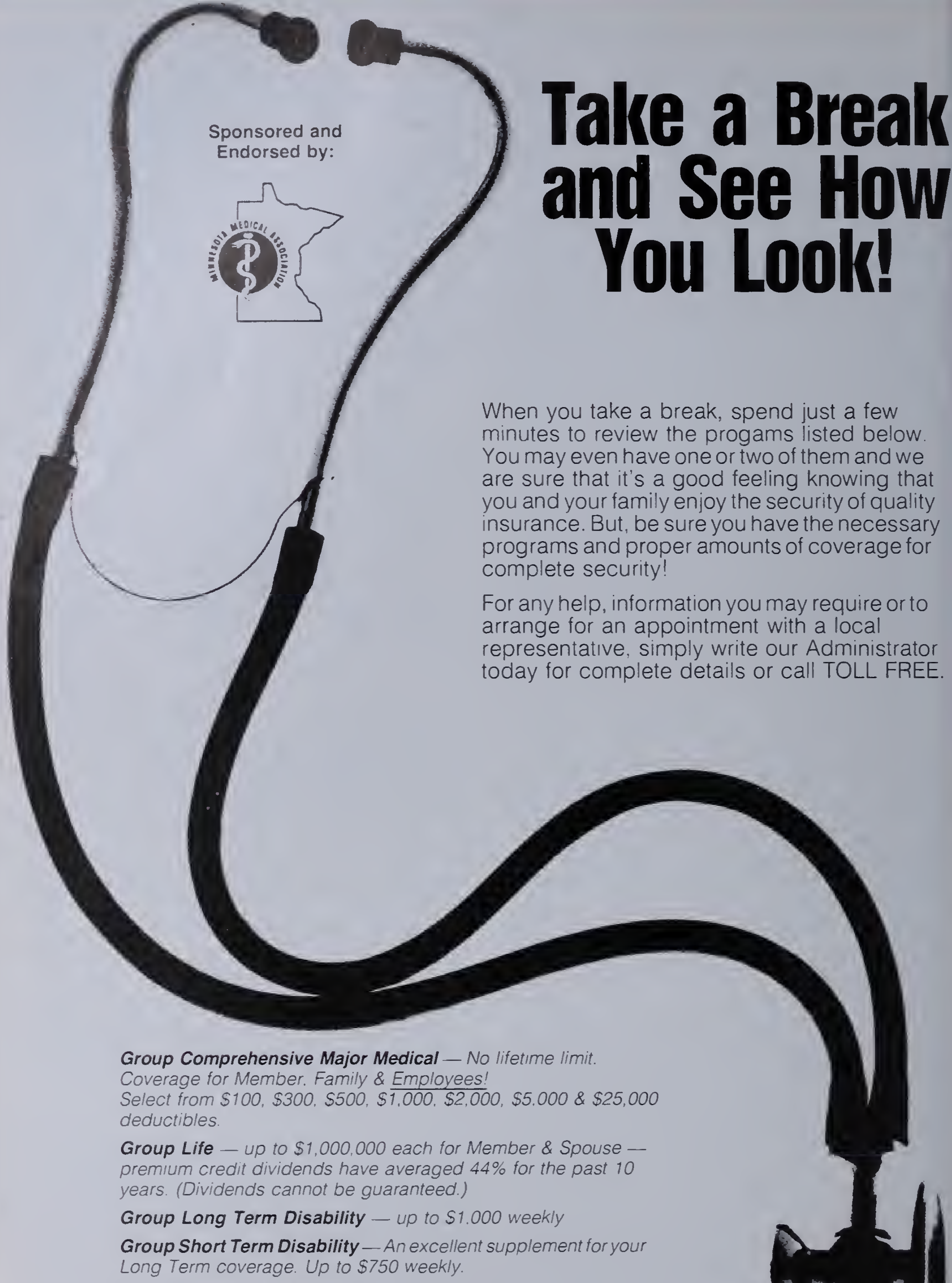

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Clinical Manifestations of Acute Leukemia

MICHAEL LOBELL, M.D.*

The acute leukemias are characterized by proliferation of "blasts" in bone marrow and other tissues. Symptoms are due to disappearance of normal blood elements as well as extramedullary consequences. Clinical features, laboratory abnormalities, cell surface markers and prognostic factors are reviewed.

ACUTE LEUKEMIA IS characterized by proliferation of "blasts" (abnormal immature blood cells) in the bone marrow and other organs. Untreated it is rapidly fatal. Symptoms are due to a disappearance of normal blood elements as well as extramedullary consequences related directly to the number of "blasts." Clinical types include acute non-lymphocytic leukemia (ANLL), a group of morphologically distinguishable syndromes occurring primarily in adults, and acute lymphoblastic leukemia (ALL), primarily a disease of young children.[1-3]

Leukemia with an acute course was first reported by Friedrich in 1857 and in 1889 Ebstein described the disease clinically.[4] Acute leukemia initially was thought to be lymphoblastic until Naegeli described the myeloblast. Identification of this cell as part of the myeloid series made it possible to recognize many cases of leukemia, both chronic and acute, as myelogenous in type. Schilling-Torgau and Raschad suggested an additional form of leukemia when they described monocytic leukemia. Further descriptions awaited modern day techniques.[4]

The factors leading to the development of acute leukemia in most patients still need identification. The following defines some predisposing causes.[1,5,6]

(a) ANLL and possibly ALL have a frequency 10-20 times the control population after exposure to the atomic bombings. Radiation for Ankylosing Spondylitis increases risk 5-15 times.[6]

(b) There is an increased risk of acute leukemia with exposure to the following drugs and chemicals: benzene, alkylating chemotherapy agents and chloramphenicol (aplasia).[1-3,6]

(c) Genetic risks include Down's Syndrome, Fanconi's Anemia and Bloom's Syndrome.[1,2,3,6]

(d) Viral causation: RNA and reverse transciptase containing viruses etiologically related to animal leukemia have been isolated. "C" type particles (presumed RNA virus) in leukemia tissue also isolated. Biochemical evidence of components characteristic of type C viruses have been detected in human leukemia cells.[1-3,6]

ANLL and ALL have approximately equal incidence — 2-3 per 100,000 per year in the United States. As the Figure shows the peak incidence of ALL is age two to four with the majority occurring before age 10.[6]

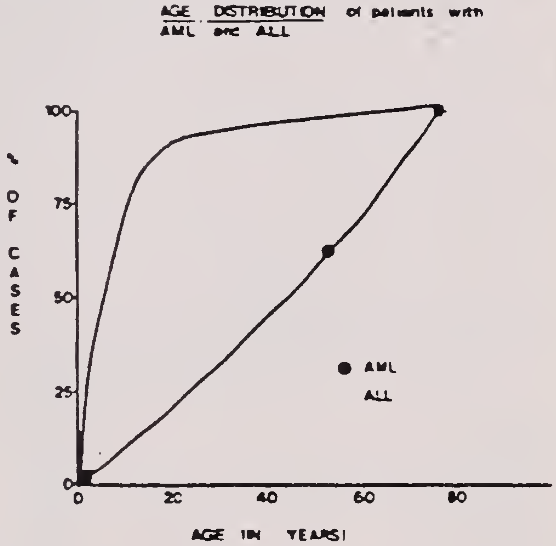

Figure — Johnson, G. J. Acute Leukemia In: Blood Phase B Curriculum University of Minnesota Medical School, Minneapolis, MN. 1978-1979. Pg. 291 (by permission).

Clinical manifestations of acute leukemia can be considered to be consequences of cellular proliferation in (a) bone marrow (medullary) or (b) other tissue (extramedullary). Consequences of medullary disease are prominent in both ALL and ANLL, while extramedullary manifestations are more prominent in ALL.[6]

Presented at symposium, "Leukemia Progress — 1984," Saturday, April 14, 1984, Mayo Auditorium, University of Minnesota, Minneapolis, Minnesota.

Sponsored by: Minnesota Chapter, Leukemia Society of America, Inc., Section of Hematology, University of Minnesota, Mayo Foundation.

Coordinators: Leukemia Society Medical Advisory Committee, Toni N. Mariani, Ph.D., Chairman.

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Acute non-lymphocytic leukemia (acute myeloid leukemia, AML, myeloblastic, myelogenous or granulocytic leukemia) includes a group of morphologically distinguishable syndromes with similarities in presentation, course and therapeutic response. The most common complaint at the time of diagnosis is that of fatigue or malaise, or a poorly defined ill sense of health usually present for several months, the severity related to the degree of anemia (Table 1).[2] Fever is the presenting complaint in 15-20% of patients and the majority have fever when the diagnosis is made. A smaller number, about 10%, present with hemorrhagic phenomena such as easy bruising, petechiae or nose bleeds. Occasionally pain in bones and joints bring the patient to a physician. Enlarged lymph nodes, abdominal masses and neurologic problems are rarely noted. Gum hypertrophy is an occasional finding. Physical evidence of disease at diagnosis is lacking in a small but significant number of patients. Extramedullary physical findings include:

(a) Lymphatics: 40-50% have lymphadenopathy at diagnosis, usually small.[2]

(b) ½ have hepatomegaly and/or splenomegaly at diagnosis, but rarely massive.[2]

(c) More than half have sternal tenderness, a fairly reliable sign.

(d) Stroke-like presentations occur with blast counts greater than 100,000/mm^3.

(e) Gingival hypertrophy is seen especially with monocytic component.

(f) Metabolic: Serum uric acid elevated in one-half of patients. Lysozyme or muramidase increased when monocytic component is present.

TABLE 1

Symptoms and Signs Observed at Time of Diagnosis in Two Series of Patients with Acute Myeloid Leukemia

	171 patients %	144 Patients %
Symptoms		
Fever	75	74
probably due to infection	41	26
Hemorrhage	33	44
Purpura	18	30
Weight Loss	22	47
Bone or joint pain	18	20
An abnormal mass	14	11
Physical Findings		
Splenomegaly	61	60
Hepatomegaly	57	54
Lymphadenopathy	64	47
Sternal tenderness	—	65
Petechiae or ecchymoses	—	46
Fundic hemorrhages	—	16

Acute Myeloid Leukemia. In: Clinical Hematology. Wintrobe, Maxwell M. and others. Lea and Febiger, Philadelphia, pg. 1539, 1981.

Laboratory findings are summarized in Table 2. Medullary characteristics of ANLL reveal a bone marrow which is usually hypercellular.[6] It should be noted that percentage of blasts and type of leukemia cell is more heterogeneous than in ALL. Impaired normal marrow cell production, present in most patients, but more variable at diagnosis than ALL. Almost all patients are anemic and thrombocytopenic at diagnosis. 25% have platelet counts less than 25,000/mm^3. Greater than 60% are neutropenic and one half have less than 1,000 neutrophils/mm^3. Peripheral blood (extramedullary) reveals that 60% have elevated leukocyte counts at diagnosis with one-third having greater than 50,000/mm^3 leukocytes, the majority being leukemic. One third of patients have leukopenia, but careful search usually reveals blasts in blood. Disseminated intravascular coagulation marks promyelocytic leukemia.

TABLE 2

The Blood at Diagnosis of Acute Myeloid Leukemia

	144 Patients %
Total leukocytes (per liter)	
less than 5.0 X 10^9	29
5.0-10.0 X 10^9	15
10.0-49.0 X 10^9	28
50.0-99.0 X 10^9	13
greater than 100.0 X 10^9	15
Neutrophils (per liter)	
less than 1.0 X 10^9	49
1.0-2.0 X 10^9	16
greater than 2.0 X 10^9	35
VPRC (l/l)	
less than 0.30	60
greater than 0.30 less than normal	37
normal	3
Reticulocytes (greater than 3%)	16
Nucleated red cells noted	46
Platelets (per liter)	
less than 50 X 10^9	39
50-150 X 10^9	44
greater than 150 X 10^9	17

Acute Myeloid Leukemia. In: Clinical Hematology. Wintrobe, Maxwell M. and others. Lea and Febiger, Philadelphia. pg. 1540, 1981.

Untreated patients with ANLL die within two to three months. 10-15% of deaths are due to hemorrhage alone and is primarily due to thrombocytopenia.[7] The primary cause of death today from leukemia is infection. This is directly related to the granulocyte count with infection increasing as the granulocyte count falls below 1,500/mm^3.[8]

A number of factors influence the response to therapy in ANLL but they vary from study to study. Older age, a preceding period of preleukemia, previous cytotoxic therapy and certain chromosomal changes adversely influence prognosis with regard to therapy. Other studies cite only cell type (promyelocytic) and a favorable response to therapy as influencing frequency of successful remission induction. Unlike ALL, the above factors affect the likelihood of CR but not propensity for early relapse.[9]

Acute lymphoblastic leukemia (ALL) is a progressive, malignant infiltration of the bone marrow and lymphatic organs by immature cells that closely resemble lymphoblasts. Increasing evidence indicates these cells are of lymphoid origin.[3] It is primarily a disease of young children with onset being most common at age three. At diagnosis there are approximately 10^{12} leukemic cells/mm^3 in the body. Medullary consequences of the disease include a bone marrow that is markedly hypercellular composed of nearly all leukemic lymphoblasts.[6] The marrow is markedly deficient in normal elements. Bone marrow failure leads to varying degrees of cytopenia (Table 3). Anemia is present in greater than 95% of patients at diagnosis. Most patients have fatigue, weakness or malaise. Most are thrombocytopenic. Greater than 80% are neutropenic and a small number present with infection.[3]

Extramedullary consequences are plentiful (Table 4). Sixty percent of patients have an elevated leukocyte count with one-half having greater than 50,000/mm^3 blast cells at diagnosis. One fourth have leukopenia. The majority of patients have enlargement of lymphatics, spleen and liver but rarely massive. One fourth have bone and joint pain and 60% sternal tenderness. Ten percent have evidence of meningeal infiltration at diagnosis but most develop meningeal leukemia if no CNS prophylaxis is given. Thrombosis and hemorrhagic infarction rare unless blast count is greater than 100,000/mm^3. Although only 1% have testicular enlargement at diagnosis, the testis may be site of extramedullary relapse. Hyperuricemia, hypokalemia and weight loss are common.[1,3,10,11,16]

TABLE 3
Symptoms and Signs at Time of Diagnosis of Acute Lymphoblastic Leukemia

	178 Patients (% of Patients)
Symptoms	
Fatigue	92
Fever without infection	71
Infection	17
Purpura	51
Other hemorrhage	27
Bone or joint pain	79
Weight loss	66
Abnormal masses	62
Physical findings	
Splenomegaly	86
Hepatomegaly	74
Lymphadenopathy	76
Sternal tenderness	69
Petechiae and/or ecchymoses	50
Fundic hemorrhage	14

Acute Lymphoblastic Leukemia. In: Clinical Hematology Wintrobe, Maxwell M. and others. Lea and Febiger, Philadelphia, Pg. 1511, 1981.

TABLE 4
The Blood at Diagnosis of Acute Lymphoblastic Leukemia

	178 Patients %
Total leukocytes (per liter)	
less than 5.0 X 10^9	25
5.0-10.0 X 10^9	15
10.0-49.0 X 10^9	34
50.0-99.0 X 10^9	15
greater than 100.0 X 10^9	11
Neutrophils (per liter)	
less than 1.0 X 10^9	73
1.0-2.0 X 10^9	9
greater than 2.0 X 10^9	18
VPRC (l/l)	
less than 0.30	65
greater than 0.30 but less than normal	33
normal	2
Reticulocytes (greater than 3%)	6
Nucleated red cells noted	25
Platelets (per liter)	
less than 50 X 10^9	62
50-150 X 10^9	30
greater than 150 X 10^9	8

Acute Lymphoblastic Leukemia. In: Clinical Hematology. Wintrobe, Maxwell M. and others. Lea and Febiger, Philadelphia, Pg. 1511, 1981.

TABLE 5
Type and Approximate Frequency of Subdivision of ALL based on Surface Markers

	Approximate % of Patients in Subset	Approximate % of Total Patients
B-cell lineage		
(Ia +)		~ 75
Sig −	~ 95	
CALLA +	~ 80	
CALLA −	~ 20	
CIgM +	~ 20	
Sig +	~ 5	
T-cell lineage		
(Ia −)		~ 20
E +, T-Ab +	~ 90	
E −, T-Ab +	~ 10	
TH2 +	~ 20	
TH2 −	~ 80	
Indeterminate (no identifiable markers)		~ 2
T- and B-cell markers		~ 2

Acute Lymphoblastic Leukemia. In: Clinical Hematology. Wintrobe, Maxwell M. and others. Lea and Febiger, Philadelphia. Pg. 1509, 1981.

There is evidence that ALL should be considered as various subsets characterized by the type of cell surface markers found on the lymphoblasts.[3] The expression of cellular and humoral immunity resides in two lymphocyte populations that originate in the thymus (T lymphocyte) and bone marrow (B lymphocyte). These cells can be further delineated by specific surface markers. Formation of rosettes with untreated sheep red cells (E+) indentifies T cells. B cells have the following: surface bound immunoglobulin(SIg) receptors for complement(CR) or the F_c portion of Ig (F_cR) or rosetting with sheep RBC exposed to antisera and complement (EA rosettes). Antibodies are also available against T cells, B cells, against Ia antigen (presumable B cells) and against common varient ALL (CALLA). Four major subdivisions of ALL are suggested by such research (Table 5). These groups have either B cell lineage, T cell lineage, no markers or both T and B cell markers.[3]

Several poor prognostic factors for ALL have been identified.[12] They are associated with a propensity for early relapse and overall survival can be expected to be reduced in patients with one or more of these characteristics. They include age, CNS involvement, white cell count, blast count, cell surface marker type, race, lymphadenopathy, organomegaly and presence of the PH^1 chromosome. Regarding surface markers the presence of T-ALL is associated with a poorer prognosis for survival and cure than is the presence of CALLA+ or NULL cells. Studies of a much more limited number of patients with B-ALL suggest they too have a relatively poor prognosis. The best prognosis is seen in those three to five years old at diagnosis. Most studies find extreme leukocytosis (greater than 100,000 X 10^9/L) is predictive of a shorter response.[1] Significantly poorer prognosis has been noted in black patients and in all studies CNS disease at diagnosis indicates a poor prognosis. For adult ALL the above prognostic associations do not necessarily apply.[12] Age appears to exert a negative prognostic influence on remission duration and survival in adult ALL. Other factors are more difficult to analyze and may not apply to disease in adults. In patients with ALL who are not cured, infection secondary to neutropenia is the principal cause of death from hemorrhage. Fatal hemorrhage in ALL is most often into the gastrointestinal tract followed closely by subarachnoid hemorrhage.[3,6,7,10,11]

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Cover Photograph

"Serengeti Giraffe"

While attending a North Central Medical Conference Seminar in March of this year in Kenya, Africa, Dr. Rodger R. Lundblad, Minneapolis urologist, took the cover photograph. He used a Nikkormat FTN Camera with a 80 mm to 200 mm zoom lens. Agfachrome film was used.

The giraffe was in the Masaimara Game Reserve, and Dr. Lundblad told the editors this was an enormous animal. The game reserve is near Nairobi.

Dr. Lundblad has had many of his photos on the covers of MINNESOTA MEDICINE.

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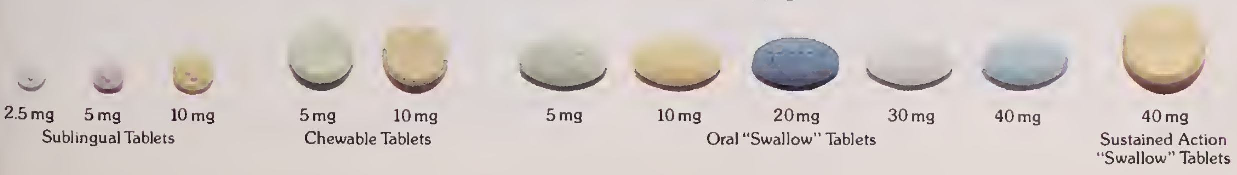

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See following page for brief summary of prescribing information.

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Please consult full prescribing information before use. A summary follows:

INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris. All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin.

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks. Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis.

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established. If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension.

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE. The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg. below 90 mmHg). Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy.

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary.

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur. Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory. The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined. However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals. On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months.

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers. In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal. The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known. However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly.

Information for Patients: Headache may occur during initial therapy with SORBITRATE. Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use.

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates.

Isosorbide dinitrate acts directly on vascular smooth muscle; therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug. A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet.

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose. There are no adequate and well-controlled studies in pregnant women. SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established.

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related. In clinical trials at various doses, the following have been observed.

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent. Cutaneous vasodilation with flushing may occur. Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose. Drug rash and/or exfoliative dermatitis may occasionally occur. Nausea and vomiting appear to be uncommon. Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates. The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg.

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose. In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure.

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours. Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported.

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended. The extent to which development of tolerance should modify the dosage program has not been defined. *The oral controlled-release forms of isosorbide dinitrate should not be chewed.*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg); Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg); Sustained Action Tablets (40 mg)

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Intramedullary Nailing and Diaphyseal Blood Supply

ERIC R. SIGMOND, M.D.* and MIGUEL E. CABANELA, M.D.†

THIS CONFERENCE on intramedullary nailing of lower extremity fractures includes special emphasis on the biology of intramedullary nailing. If one studies the biology of this situation, one cannot help but wonder whether intramedullary nailing can work. However, it does work and very well. We will present two cases and Dr. Sigmond will talk about the diaphyseal blood supply and the sequence of fracture healing after intramedullary nailing.

Report of Cases

Case 1

Dr. Miguel E. Cabanela: This 18-year-old patient was celebrating the acquisition of his new motorcycle with one too many beers. When he left the pub, he drove the machine off the road, even though it was not an off-road machine. His injuries included fractures of his tibia and fibula (Figure 1). Fortunately, this was a closed fracture. But it was very unstable because the tibia and fibula were fractured at the same level. Maintenance of reduction was difficult because of this fracture pattern.

Dr. Funk, forget the title of the conference and tell us how you would manage this.

Dr. Daniel A. Funk: This is a midshaft tibia-fibula fracture. It is difficult to forget the title of the conference because this fracture would do very well with intramedullary rodding. Of course, other options include external fixation or casting. Whichever option one chooses, one must watch for the development of a compartment syndrome.

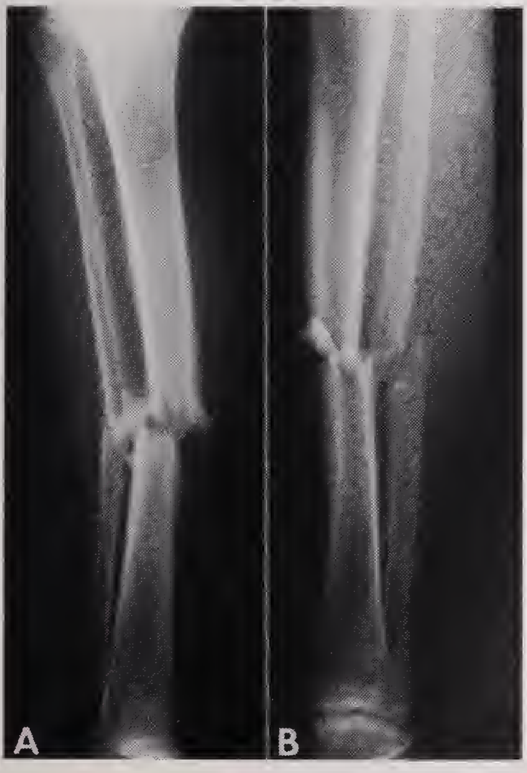

Fig. 1 (case 1) — Anteroposterior (A) and lateral (B) radiographs of leg of 18-year-old man involved in motorcycle accident.

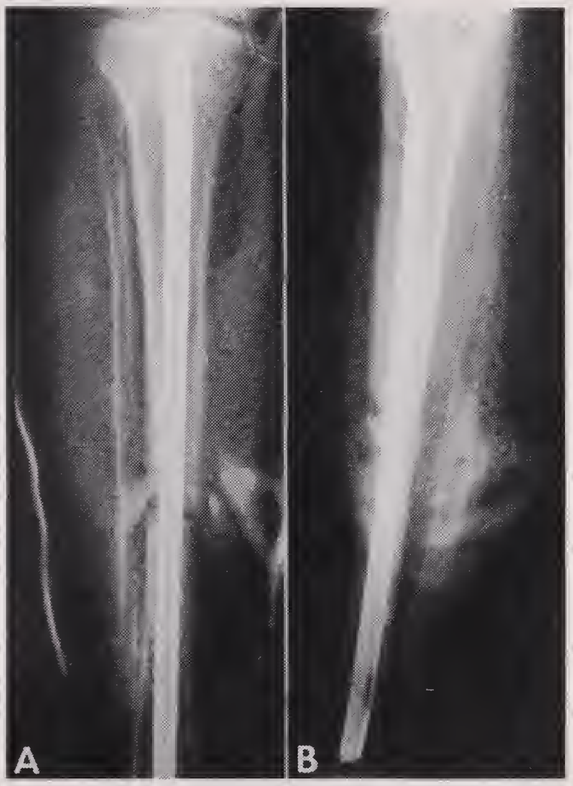

Fig. 2 (case 1) — Anterposterior (A) and lateral (B) radiographs immediately postoperatively.

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Fracture Conference, March 14, 1984.

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Dr. Cabanela: I do not think that external fixation is appropriate for most closed injuries. I agree that casting is a viable option for the fracture. However, with a fracture like this with a relatively small fracture surface, the morbidity and time of immobilization with casting would be increased. I think casting would produce slower healing compared with intramedullary nailing. Who in this group would operate on this fracture? (Five out of 15 said they would.)

We did operate in this case, after discussing the alternatives with the patient. These alternatives were: casting for probably 16 weeks, the first four to six weeks in a long leg cast followed by a patellar tendon bearing orthosis; or closed nailing, with full weight-bearing without protection anticipated within six weeks. The patient chose the latter. Closed nailing is usually more difficult in the tibia than in the femur. Fortunately, in this case it went very well and quickly. The patient left the hospital six days after nailing and 10 days after injury (Figure 2).

Figure 3 shows the radiographs 18 weeks postoperatively. The patient walked on the fractured leg practically from the moment he left the hospital. He felt comfortable enough to do this. By four weeks he was walking with full weight-bearing and we changed his patellar tendon bearing cast to an orthosis. I think he left the patellar tendon orthosis at home at about six weeks and by eight weeks he was back to full unprotected weight-bearing. He has essentially normal function of the leg.

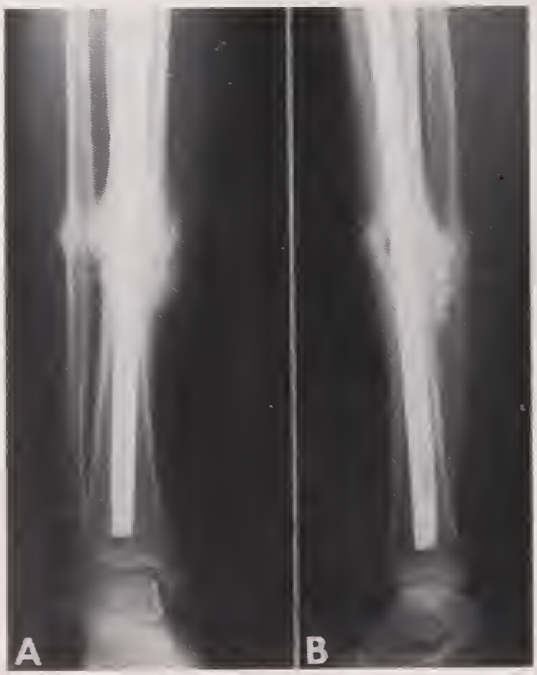

Fig. 3 (case 1) — Anterposterior (A) and lateral (B) radiographs at 18 weeks postoperatively.

An unstable fracture with a small area of fracture surface increases the chances of slow healing, and this is one of the best indications for closed nailing.

Dr. Eric R. Sigmond: One of the reasons the Lottes nail, the original tibial nail, fell into disrepute was because of the relatively high infection rate associated with its use. What is your infection rate?

Dr. Cabanela: I have had one case of infection after nailing of an open fracture, but it healed quickly after the nail was removed. I have treated too few fractures with this method to give a statistically valid rate. The infection rate from the literature is less than 1% for closed nailing of the tibia.

This ideal case illustrates the effectiveness of intramedullary nailing of the tibia. Although the subject remains controversial, more and more trauma centers around the country are using this technique. The results of tight nailing with reaming justify its continued use.

Dr. Mark B. Coventry: Have you had any complications with tibial nailing? What percentage of ti-

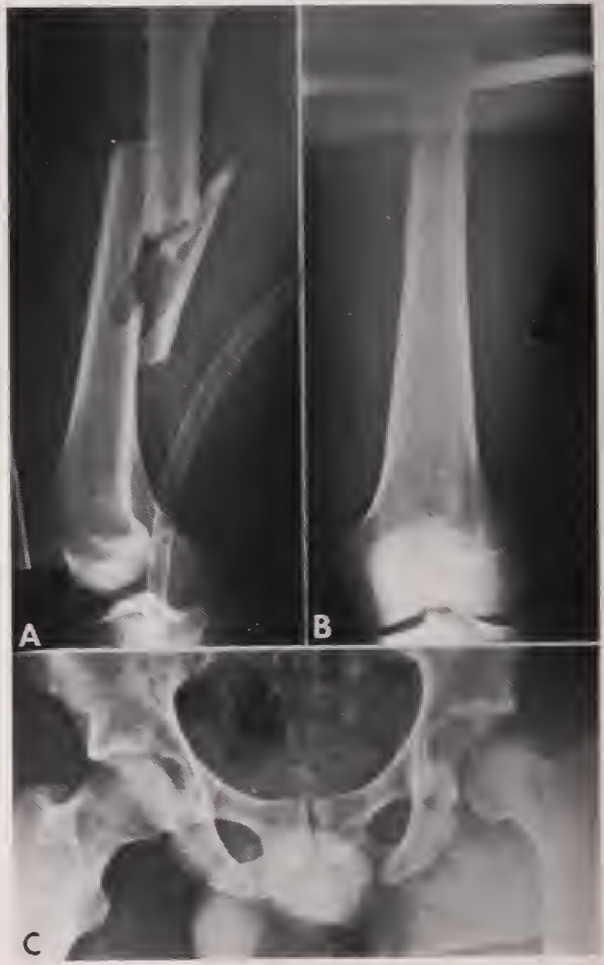

Fig. 4 (case 2) — Preoperative radiographs of 21-year-old car accident victim. (A) Right femur. (B) Left femur. (C) Pelvis.

bial fractures would you treat with the Sarmiento approach?

Dr. Cabanela: I have had troubles. One was the one infection I mentioned before. Another was exploding the tibia while trying to force a nail down the intramedullary canal. In the case with the infection, suppressive antimicrobial therapy was given until the fracture healed, and then we removed the nail. The infection cleared quickly after the nail had been removed. In the other case, the leg with the shattered tibia was placed in a cast with the nail left in place. The fracture went on to uncomplicated union. I cannot give any numbers for the percentage of tibial fractures treated with nailing compared to casting and bracing, but I still treat the majority of tibial fractures with casting or bracing or both. I do not mean to imply that operative treatment is the only way to go. Casting and bracing are appropriate for the majority of tibial fractures.

Case 2

Dr. Cabanela: This patient was 21 years old when he was involved in a car accident that caused bilateral femoral shaft fractures and a dislocated hip (Figure 4). The patient had been pinned under the car for six hours before he was found. It is important to note the adducted position of the proximal femoral fragment ipsilateral to the dislocated hip. Without a radiograph of the hip, one can deduce that there is an injury about the hip. Normally, the proximal fragment of a fractured femur is abducted, reflecting the pull of the abductors. Only with an ipsilaterally dislocated hip will the proximal fragment be adducted. It no longer is necessary to deduce this because now in every case of fractured femur an anteroposterior radiograph of the pelvis should be made to rule out associated hip dislocation or femoral neck fracture. The patient was brought to the emergency room in surprisingly good condition. What would you do now, Dr. Fuller?

Dr. Donn O. Fuller: It is necessary to obtain good relaxation. If the hip did not reduce easily in the emergency room, one would have to take the patient to the operating room and attempt reduction under general anesthesia.

Dr. Cabanela: Dr. Lanzer, how did you reduce this hip in the emergency room?

Dr. William L. Lanzer: I put in a tibial traction pin and had two assistants pulling on it while I manipulated the proximal fragment. I could feel the reduction (Figure 5).

Dr. Cabanela: It is quite unusual to be able to do this in the emergency room. Perhaps the fact that there was a small posterior acetabular fracture made the reduction easier. The patient was kept in bilateral skeletal traction. Dr. Fuller, do you see anything unusual in the postreduction radiograph?

Dr. Fuller: The joint space of the hip is widened. One would want to get a computed tomography (CT) scan to rule out any intra-articular fragments from the acetabulum.

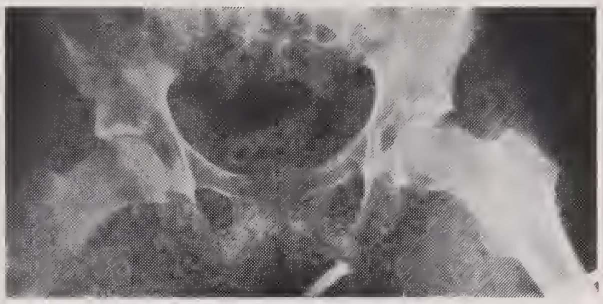

Fig. 5 (case 2) — Pelvic radiograph after reduction of hip dislocation.

Dr. Cabanela: We did get a CT scan and it was negative for intra-articular fracture fragments. Now what would you do, Dr. Fuller?

Dr. Fuller: I would nail both fractured femurs. It is imperative to stabilize both for rehabilitation. One might use circlage wires on the butterfly fragment on the right.

Dr. Cabanela: Circlage wiring is not frequently indicated now because one can use the new interlocking nails that can stabilize comminuted or segmental fractures. It remains a viable choice in some situations. We used an interlocking nail on the left femur (Figures 7 and 8) with closed technique. When the fractured limb is pulled out to its correct length and

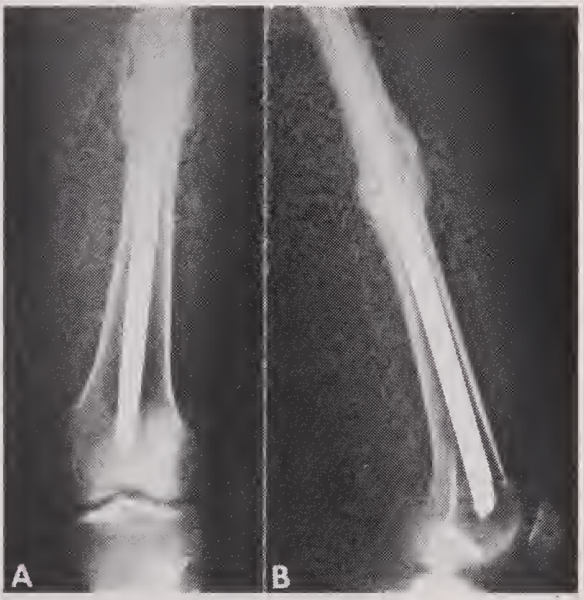

Fig 6 (case 2) — Anteroposterior (A) and lateral (B) radiographs of left femur at five months postoperatively.

the ends of the fractured bone still will not appose, a rotational maneuver under general anesthesia will help improve apposition in many cases. The fracture ipsilateral to the dislocated hip was easily close nailed (Figures 6 and 7). The range of motion of the hip was excellent, but the joint space was still widened. Would you explore the hip joint?

Dr. Fuller: With a negative CT scan, I do not think I would.

Dr. Anthony J. Bianco, Jr.: Did you do an arthrogram?

Dr. Cabanela: No. It might have been a good idea, but we elected not to explore the hip joint, in agreement with Dr. Fuller's reasoning. The contralateral fracture was nailed with a Brooker-Wills interlocking nail. This worked quite well. We kept the femoral fracture with ipsilateral hip dislocation in light traction, with a continuous passive motion machine to aid in cartilage nutrition, for about four weeks. After that we allowed partial weight-bearing. At three months the patient was walking and the hip joint space had returned to normal. The patient still has symptoms in the right hip. I am worried about avascular necrosis. The type IV fracture dislocation of the hip has the worst prognosis.

Dr. Rudolph A. Klassen: One way of reducing a hip with an associated femoral fracture is to insert a large Steinmann pin into the proximal fragment and use that to gain leverage to reduce the fracture.

Dr. Cabanela: Now, Dr. Sigmond will talk about fracture healing with intramedullary fixation.

Dr. Sigmond: First, it would be beneficial to review the anatomy of the blood supply to the long bones.

Blood flow to the diaphysis of a long bone has three major sources: the nutrient artery, multiple small metaphyseal vessels, and the periosteal vessels along the entire shaft of the bone. The tibia has one major nutrient artery; the femur most often has two. The contribution of the nutrient artery to the blood supply of the cortex has long been known to be important. There is debate as to whether the periosteal blood supply supplies any of the cortex, whether it acts as a backup system or whether it supplies the outer one-third of the cortex.

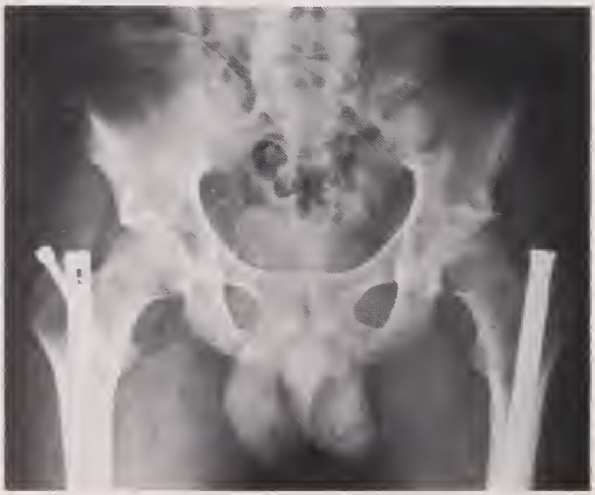
Fig. 7 (case 2) — Anteroposterior radiograph of pelvis at 5 months postoperatively.

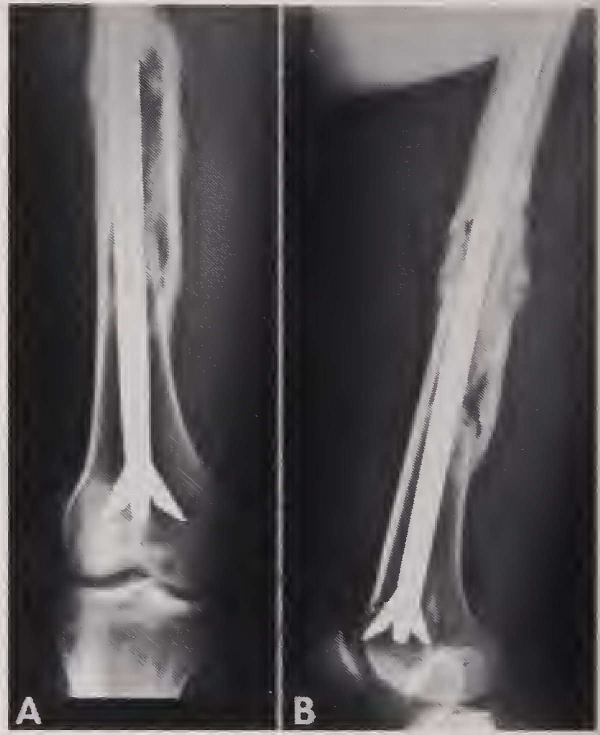

Fig. 8 (case 2) — Anteroposterior (A) and lateral (B) radiographs of right femur at five months postoperatively.

The effects of reaming and tight nailing on the endosteal blood supply are devastating. The procedure destroys the nutrient arteries, thereby depriving from two-thirds up to the entire cortex (depending on whom one believes) of blood supply. Metaphyseal vessels survive because of their numbers and multiple origins.

It is indeed amazing that intramedullary nailing is such an effective treatment when one considers the sequelae of reaming and nailing. There is extensive cortical ischemia and necrosis, not only at the fracture site but also in areas remote from the fracture site. There is resorptive widening of the haversian canals, producing cortical osteoporosis. The prolific response of the periosteal vessels is probably the reason for the success of intramedullary nailing. Extensive subperiosteal osteogenesis is responsible for fracture healing. There is prolonged revascularization of the cortex, which precedes the slower remodeling with new bone formation. Revascularization of the medullary canal takes the form of a fibrovascular sheath that encloses the nail. The membrane contains not only invading vasculature but also pluripotential cells that can form either osseous or marrow elements. The inner cortex is resorbed to a cancellous structure, and connections between the endosteal, cortical, and periosteal blood supplies ultimately are reestablished.

The most obvious cause of cortical necrosis is the destruction of the nutrient artery; however, microemboli of fat have been found in the bony vasculature. Femoral reaming performed in conjunction with suction in dog femurs has produced significantly less cortical necrosis. This implies that these fat emboli play some role in cortical necrosis. There is debate as to the length of time the cortex remains necrotic. Some authors contend that necrosis persists for up to 11 months. The cases presented today demonstrate that there is not long-standing cortical necrosis in all cases.

Cortical revascularization proceeds more rapidly than cortical remodeling. The process starts with vessels growing down the marrow canal in small crevices between the nail and the bone. The inner cortex is slowly absorbed. Revascularization of the remote areas proceeds more quickly than does that at the fracture site. Subperiosteal vessels penetrate the cortex; this is associated with the peak of vascularity of the bone as a whole, occurring at seven to eight weeks. At the conclusion of the process the blood flow is centrifugal — the endosteal blood supply enters the cortex and exits via the periosteal vessels.

The amount of periosteal reaction is influenced by the stability of the fracture and the timing of the operation. The more stable the fracture and the longer one waits to fix the fracture, the less will be the periosteal reaction. Conversely, periosteal reaction will be increased with fracture instability and shorter periods between the injury and the operative fixation. Periosteal reaction occurs in areas remote from the fracture in response to the destruction of the endosteal blood supply. This is subperiosteal osteogenesis, not merely fracture callus. Woven bone is most commonly produced.

By 3 weeks after a fracture there is complete loss of osteocytes extending at least 3 mm from the fracture site. Vascular remodeling widens the haversian canals and at 8 weeks the cortex starts to remodel to form cancellous bone. If the periosteal reaction has laid down enough bone to form a thick outer shell, the avascular ends may remain as sequestrae and never remodel.

Union occurs relatively quickly with tight intramedullary nailing. Because of the stability there is little periosteal reaction. Because the endosteal blood supply has been destroyed, there is no endosteal contribution to the healing. There is direct formation of bone from the fibrous stroma that replaces the fracture hematoma. Thus, there is no need for endochondral ossification because the formation of cartilage has been bypassed. This is the major difference between fracture healing with tight intramedullary and loose intramedullary nailing.

Fracture healing is much slower with loose intramedullary nailing. Periosteal reaction is much greater because of the increased instability. This reaction can form bone as thick as the original cortex in 2 weeks and can remodel to form the new cortex of the healed fracture. Cartilage replaces the fibrous stroma of the fracture hematoma. Endochondral ossification is thus the predominant method of bone formation. The instability of the fracture can lead to cleft formation between the two periosteal collars. If the instability is great enough, the cleft can deepen and form a synovial pseudarthrosis.

One can see why tight intramedullary nailing is important. Without reaming, tight fixation of the fracture is impossible. In spite of the severe trauma inflicted on the circulation of the bone, the method continues to work and is enjoying increasing popularity.

Suggested Reading

Anderson LD: Compression plate fixation and the effect of different types of internal fixation on fracture healing. J Bone Joint Surg [Am] 47:191, 1965.

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Sevitt S: Bone Repair and Fracture Healing in Man. Edinburgh, Churchill Livingstone, 1981.

Physicians Philanthropic Foundation of the MMA

To MMA Members . . . .

Harold W. Brunn retired from the Minnesota Medical Association on September 1, 1984, after 32 years of dedicated service to MMA. The 1984 MMA House of Delegates requested that, in recognition of his long time interest in medical students, a Harold W. Brunn Fund be established to assist medical students. I am pleased to announce the creation of the Harold W. Brunn Fund by the Board of Directors of the Physicians Philanthropic Foundation of the MMA. Your contributions will recognize Harold's dedication to our profession and will be used for low interest loans to needy medical students. Please designate the Harold W. Brunn Fund with your contribution.

John J. Regan, Sr., M.D., President
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eferences:

Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.

Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. Chest 78 (July suppl):234-238, 1980.

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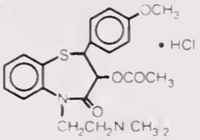
DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride, (+)-cis- The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect, cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given: a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5% asthenia (1.2%), AV block (1.1%). In addition, the fo were reported infrequently (less than 1%) with the ord tion corresponding to the relative frequency of occu

Cardiovascular:	Flushing, arrhythmia, hypoten dia, palpitations, congestive syncope.
Nervous System:	Paresthesia, nervousness, tremor, insomnia, hallucinations
Gastrointestinal:	Constipation, dyspepsia, diarr mild elevations of alkaline phosp SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, p
Other.	Polyuria, nocturia.

The following additional experiences have been no

A patient with Prinzmetal's angina experiencing vasospastic angina developed periods of transient asystole approximately five hours after receiving a dose of CARDIZEM

The following postmarketing events have been r quently in patients receiving CARDIZEM: erythema m kopenia; and extreme elevations of alkaline phosp SGPT, LDH, and CPK. However, a definitive cause and these events and CARDIZEM therapy is yet to be est

OVERDOSAGE OR EXAGGERATED RESP

Overdosage experience with oral diltiazem has Single oral doses of 300 mg of CARDIZEM have been by healthy volunteers. In the event of overdosage o response, appropriate supportive measures should b addition to gastric lavage. The following measures may

Bradycardia	Administer atropine (0.60 to 1. is no response to vagal blocka isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above degree AV block should be trea diac pacing.
Cardiac Failure	Administer inotropic agents (i dopamine, or dobutamine) and d
Hypotension	Vasopressors (eg, dopamine o bitartrate).

Actual treatment and dosage should depend on the s clinical situation and the judgment and experience o physician.

The oral/LD_{50}'s in mice and rats range from 415 t and from 560 to 810 mg/kg, respectively. The intraven these species were 60 and 38 mg/kg, respectively. Th dogs is considered to be in excess of 50 mg/kg, while seen in monkeys at 360 mg/kg. The toxic dose in man but blood levels in excess of 800 ng/ml have not bee with toxicity

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atheroscl nary Artery Disease or Angina Pectoris at Rest D nary Artery Spasm. Dosage must be adjusted to e needs. Starting with 30 mg four times daily, before n bedtime, dosage should be increased gradually (give doses three or four times daily) at one- to two-day i optimum response is obtained. Although individual respond to any dosage level, the average optimum d appears to be 180 to 240 mg/day. There are no available ing dosage requirements in patients with impaired ren function. If the drug must be used in such patients, titrat carried out with particular caution.

Concomitant Use With Other Antianginal Agen

1. **Sublingual NTG** may be taken as required to anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy** — CARDIZEM m coadministered with short- and long-acting nitrat have been no controlled studies to evaluate the effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIO

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles o 0088-1771-47) and in Unit Dose Identification Paks o 0088-1771-49). Each green tablet is engraved with MA side and 1771 engraved on the other. CARDIZEM 6 tablets are supplied in bottles of 100 (NDC 0088-1772-4 Dose Identification Paks of 100 (NDC 0088-1772-49) tablet is engraved with MARION on one side and 1772

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Minnesota Plan for Nonsmoking and Health: Ideas for Statewide Action

ANDREW G. DEAN, M.D., M.P.H.;* JAMES M. SHULTZ, M.S.;* THOMAS E. KOTTKE, M.D.;†
STEVEN W. GUST, Ph.D.;* and KATHLEEN C. HARTY, M.Ed.*

The Technical Advisory Committee on Nonsmoking and Health was appointed by the Minnesota Commissioner of Health to develop a plan for statewide smoking control and for the promotion of nonsmoking in Minnesota. The report of the Committee recommendations and a reveiw of the report is presented, highlighting those recommendations directed toward physicians and health care institutions.

ON SEPTEMBER 17, 1984, the Minnesota Department of Health released "The Minnesota Plan for Nonsmoking and Health: Report and Recommendations of the Technical Advisory Committee on Nonsmoking and Health".[1] The report contains recommendations for reducing mortality, morbidity, and costs by promoting nonsmoking in Minnesota, encouraging smoking cessation among current smokers, facilitating primary prevention of cigarette smoking among Minnesota youth, and promoting clean indoor air. The recommendations are in the broad areas of: (1) school and youth education, (2) public education, (3) regulatory measures, (4) economic incentives, and (5) information and evaluation needs.

The recommendations present a statewide plan to reduce smoking prevalence through education and mass communication, public and private regulation, and economic incentives and disincentives. They are addressed to many audiences including individual smokers and nonsmokers. The underlying assumption is that no single method is sufficient; multicomponent programs are as essential on the statewide scale as they are for individual smokers.

The complete text of the recommendations is contained in Table 1. Several recommendations are directed specifically to physicians and health care institutions. These are presented in boldface type. This article summarizes the report with emphasis on recommendations and policies of special interest to Minnesota physicians and health professionals.

Background

In 1982, a committee of experts convened by the Commissioner of Health concluded that cigarette smoking was among nine major unresolved health problems in Minnesota.[2] Of the five problems related to lifestyle — cigarette smoking, alcohol and drug misuse, nutrition, physical inactivity, and stress — cigarette smoking was selected as the first target for comprehensive statewide planning and action.

The Technical Advisory Committee on Nonsmoking and Health was appointed by the Com-

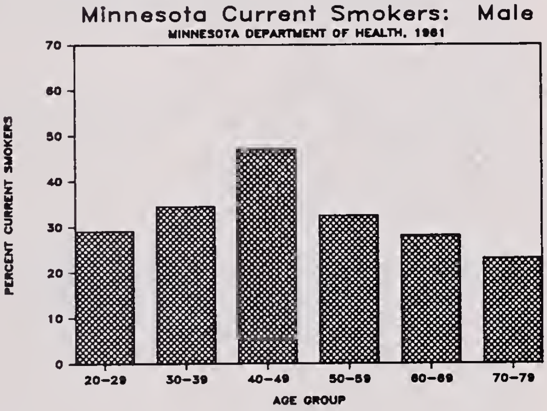

Figure 1(A)

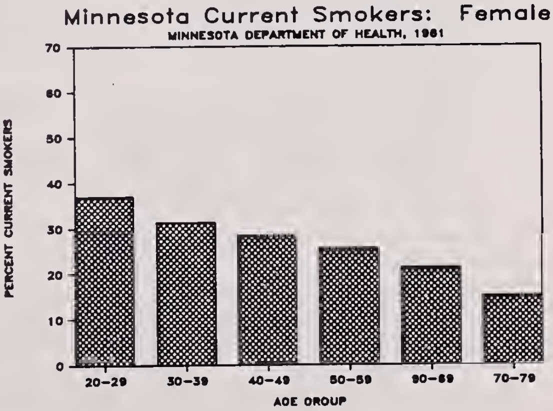

Figure 1(B)

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*Minnesota Department of Health, Minneapolis, Minnesota.
†Department of Medicine and School of Public Health, University of Minnesota, Minneapolis.

TABLE I

The Technical Advisory Committee on Nonsmoking and Health Recommendations for the Promotion of Nonsmoking in Minnesota

School and Youth Education

The School Curriculum:

Schools in Minnesota should expose students at the seventh grade level to six or more curriculum hours of nonsmoking education, using techniques shown through studies to be effective in reducing smoking rates.

The contest approach used in Sweden, in which students and teachers are awarded plaques and public recognition for attaining a completely nonsmoking class, should be evaluated for use in Minnesota. Other approaches to nonsmoking, particularly through student organizations, should be encouraged and evaluated. A classroom and television curriculum in which parents watch jointly with children at home has shown promise and should be further evaluated.

The School Environment:

Regulation of smoking in schools should be conducted in a way which deemphasizes the importance, prestige, maturity, and desirability of the smoking habit.

a. The Minnesota Clean Indoor Air Act should be thoroughly known and implemented in schools.
b. The focus on nonsmoking in the schools should be kept positive and rule environment firm and consistent but not oppressive.

The School's Relationship with the Community

Informational, regulatory, and economic measures to promote nonsmoking in the community should be designed to reinforce, supplement, and utilize programs within the schools.

Public Education

Promotion of Nonsmoking through Marketing and Communication Techniques

The Minnesota Department of Health should sponsor a long-term public communications campaign to promote nonsmoking using social marketing principles. The marketing of nonsmoking should be carefully coordinated with regulatory, economic, and health-information measures to achieve a combined effect.

The Minnesota Department of Health should continue to provide scientific information on smoking and nonsmoking on a regular basis to the news media and other channels.

The Health Care System as Teacher and Role Model

Physicians should treat smoking as a serious preventable or curable health problem. Diagnostic and therapeutic techniques should be handled with the same level of professional and scientific expertise applied to other conditions.

The Role of the Community

Interested Community Health Services Agencies and other organizations in Minnesota communities should conduct community-wide campaigns for promotion of nonsmoking. Training sessions and materials should be provided for those who wish to learn community organization techniques.

Advice for Smokers

Advice for Nonsmokers

Public and Private Regulatory Measures

Businesses and Other Organizations as Promoters of Nonsmoking

The Minnesota Department of Health should establish a visible and successful nonsmoking policy for Department of Health employees which can serve as a model for other organizations.

Hospitals, clinics, physicians offices, long term care institutions, voluntary health organizations, the Minnesota Department of Health, and Community Health Services Agencies, should establish smoke-free buildings as soon as possible and no later than 1990.

Minnesota employers are encouraged to set nonsmoking policies in the worksite which are broader than the minimum provisions of the Minnesota Clean Indoor Air Act. Employers may implement a range of stronger policies, including the establishment of a smoke-free worksite. The acceptability of such policies is demonstrated by successful examples in health institutions and individual Minnesota corporations.

At least eighty percent of Minnesotans have contact with physicians and/or health care facilities in a given year. Health care institutions should become more effective educational resources and image makers by:

a. developing and publicizing definite policies promoting nonsmoking, such as that recently instituted by the Minnesota Medical Association.
b. The Minnesota Department of Health, the Minnesota Hospital Association, the Minnesota Nursing Association, and other representatives of the health care industry should jointly develop policies and recommendations for visible and effective enforcement of the Minnesota Clean Indoor Air Act in hospitals. Long-term goals promoting nonsmoking in health care settings beyond the requirements of the Act should be encouraged, but not legislated at present, with the exception that the sale of cigarettes in health care institutions is incongruent with the facts on smoking and health and should be eliminated by either voluntary or legislative means.

Organizers of public events should reject contributions and sponsorship monies which result in advertising for cigarettes and other tobacco products.

Making the Minnesota Clean Indoor Air Act More Effective

Clear materials in the form of questions and answers on this topic should be prepared by the Minnesota Department of Health and be widely distributed through channels which will effectively reach both employers and the public.

The Minnesota Department of Health currently offers consultation and information on the Minnesota Clean Indoor Air Act in the workplace only through response to inquiries and complaints, usually by means of letters and telephone calls. The Department should expand its consultation, information and enforcement program for the Act in the workplace and make this activity widely known

TABLE 1 *(Continued)*

through public information channels.

Enforcement of rules under the Minnesota Clean Indoor Air Act has recently been centralized in the Minnesota Department of Health. All workplaces should be included in a uniform set of rules.

Restaurant owners should be encouraged to increase the size of nonsmoking sections beyond the 30% required by law if necessary to accommodate all patrons desiring nonsmoking areas.

Recommendations to the Federal Government

Cigarettes which self-extinguish in five minutes or less are highly desirable for fire safety and indoor air quality. National legislation to effect this is recommended. This recommendation should be transmitted through a variety of means to Minnesota's Congressional delegation.

National legislation should be enacted which would:

a. remove the restrictions on state legislation of tobacco advertising required by the Cigarette Labelling Act, and
b. require that cigarette warning labels be clear, specific, and rotated periodically.

Comment: Direct regulation of advertising by state legislation is forbidden by the federal legislation which requires the health hazard warning on cigarette packages. Although this provision could be challenged, the legal effort required could be extremely expensive and its outcome uncertain.

Controlling Access to Tobacco

A state law forbidding distribution of free cigarettes should be enacted.

The Federal government should be asked to establish administrative policies which are consistent with the Minnesota Clean Indoor Air Act for federal properties in Minnesota.

Economic Incentives and Disincentives

Raising the Cost of Smoking

The State of Minnesota should increase the existing 18-cent excise tax on cigarettes by 10 cents during fiscal year 1986. Subsequent *annual* 5-cent excise tax increases should be planned for the following 5-year period.

The Commissioner of Health should send letters to Minnesota's congressional delegation recommending that:

a. the temporary 8-cent increase in federal excise tax on cigarettes, effective January, 1983, be made permanent; and
b. legislation for additional increases in the federal excise tax be drafted and introduced.

Financing Nonsmoking Programs

Funding needs for the promotion of nonsmoking should be obtained from multiple sources including legislative appropriation.

Lower Insurance Costs for Nonsmokers

Chief Executives and Medical Directors of companies writing life and health/disability insurance and pensions in the State of Minnesota should be encouraged to offer nonsmokers' discounts on individual life, health, and disability insurance policies. The availability of nonsmokers' discounts on individual insurance policies should be communicated to the public through public health messages and insurance industry advertising.

The Minnesota Department of Health and the Minnesota Insurance Information Center should encourage property/casualty companies writing homeowners insurance to consider giving discounts to nonsmoking households.

"Cafeteria" plans developed within the context of employee benefits programs should distinguish nonsmokers for financially rewarding options, incentives, or bonuses.

Business leaders should be made aware of the reduction in insurance and employee benefits costs which is possible from reduced smoking rates among employees.

Education About Economic Benefits of Nonsmoking

Employers should be informed about the excess costs incurred by smokers in the workforce, based on the most accurate estimates in the research literature.

Employers should be informed of strategies to encourage nonsmoking among employees through differential benefits and financial incentives favoring nonsmokers and by offering smoking cessation programs to smokers. The respective employer organizations and societies should be encouraged to participate.

Smokers should be advised to inquire whether their life and health insurance programs cover the costs of smoking cessation programs.

Employers and the public should be informed about energy and dollar savings from reduced ventilation costs in buildings where smoking is prohibited or greatly restricted.

Comment: Assessing special taxes on the advertising of cigarettes is not a practical way to counter the effect of advertising and is not recommended.

Comment: It appears that employers could hire only nonsmokers. With regard to hiring practices, smokers are not a protected group pursuant to federal or state statutory civil rights laws.

Information and Evaluation Needs

Coordinating Information Resources

The Minnesota Department of Health should maintain a research database of scientific literature on cigarette smoking. The database should include information on health consquences, smoking patterns, prevention of smoking onset, smoking cessation, health economics of smoking, and policies related to smoking.

The Minnesota Department of Health should identify and facilitate access to educational materials related to smoking; the availability of these materials to educators, health professionals, and the public through the Department and other sources should be publicized.

(Continued next page)

TABLE 1 (continued)

Evaluating Program Impact

The Minnesota Department of Health should conduct annual telephone surveys using random digit dialing to provide ongoing information on smoking prevalence, public knowledge and opinions, and the penetration of program efforts of sufficient accuracy for evaluation of the statewide nonsmoking program. For research purposes, the validity of surveys should be checked through biochemical measures of cigarette smoking. Core questions should be kept constant to follow smoking trends over time.

The Minnesota Department of Health should provide assistance to communities in conducting survey research prior to and after community nonsmoking campaigns.

The Minnesota Department of Health should maintain resources to conduct or contract for other types of survey research such as determining location of programs, observation of behavior, compliance with the Minnesota Clean Indoor Air Act, placement of no-smoking signs, and additional survey needs.

A formal research design should be used whenever possible to systematically implement recommendations included in this report. Such a structure permits detailed evaluation of program effectiveness, is desirable for program effectiveness, is desirable for program monitoring, and is essential if grant funding for programs is to be obtained.

TABLE 2 -- EPIDEMIOLOGIC FINDINGS ON SMOKING IN MINNESOTA

Smoking Status of Minnesota Adults, 1981

Smoking Status	Males	Females	Both Sexes
Never Smoked	37.4%	53.3%	47.0%
Former Smokers	30.9%	18.7%	23.5%
Current Smokers	31.7%	28.0%	29.5%

Smoking-Attributable Deaths by Diagnostic Category, Minnesota, 1981

Diagnostic Category	Males	Females	Both Sexes
Heart Diseases	1350	450	1800
Cancers	1280	440	1720
Respiratory Diseases	620	290	910
Digestive Diseases	60	35	95
Perinatal Conditions/SIDS	35	25	60
Cigarette-Ignited Fire Deaths	20	10	30
TOTALS:	3365	1250	4615

Annual Smoking-Attributable Disability:	39,000 Person-Years
Annual Smoking-Attributable Economic Costs:	
Direct Health Care Costs	$374,600,000
Indirect (Lost Income) Costs	
Premature Mortality	$303,000,000
Disability	calculations in progress

missioner of Health in November, 1983 and was charged with the task of developing a plan for statewide smoking control and the active promotion of nonsmoking. The Committee was comprised of representatives from the fields of epidemiology, health behavior research, smoking cessation and prevention research, cardiology, respiratory medicine, nursing, wholesale/retail sales, insurance, legislation, law, advertising, community action, business, labor, local government, education, and economics.

Highlights of the Epidemiologic Findings

According to a 1981 risk factor survey, 29.5% of the Minnesota population over age 18 currently smoked cigarettes (Figure 1).[3] In the younger age groups, women are more likely than men to smoke.

Smoking-attributable mortality in Minnesota totals more than 4600 deaths per year (Table 2). Annually, cigarette smoking is responsible for 1800 cardiovascular disease deaths — 1250 from coronary heart disease and 550 smoking-attributable deaths from sudden cardiac death, atherosclerosis, aortic aneurysm, peripheral vascular disease, and cerebrovascular disease.[4]

The estimate of 1720 smoking-linked cancer deaths includes 1230 deaths from lung cancer, plus deaths from cancers of the oral cavity, larynx, esophagus, pancreas, kidney, urinary bladder, stomach, and uterine cervix.[5]

Eighty-five percent of deaths from emphysema, chronic bronchitis, and chronic obstructive pulmonary disease (660 deaths annually in Minnesota) can be ascribed to cigarette smoking.[6] Smoking-related deaths from pneumonia, influenza and asthma elevates the total of smoking-related respiratory deaths to 910.

Deaths from other causes are also attributed to smoking: (1) 95 deaths annually among digestive diseases; (2) 60 perinatal and infant deaths from respiratory distress syndrome, low birth weight, and sudden infant death syndrome; and (3) 30 deaths from cigarette-ignited fires. The total of 4615 smoking-attributable deaths (1981 mortality data) represents 14% of total mortality for Minnesota (Figure 2).

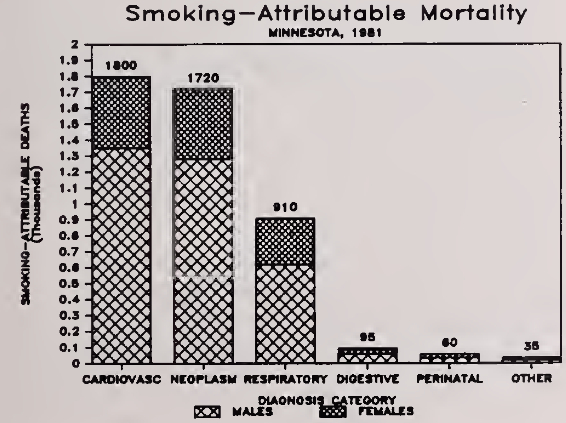

Figure 2

Cigarette smoking is considered responsible for 9% of total statewide disability — 39,000 person - years of disability — based on the application of smoking-attributable fractions to earlier calculations of annual disability.[7]

Total direct health care costs attributable to cigarette smoking were estimated at $374,600,000 for 1983, 7.05% of total direct costs.[1] This figure is equal to 82 cents per pack sold in 1983 (456,681,000 packs) or $91 per Minnesota citizen. Indirect mortality costs — the costs of lost income from persons who die prematurely from smoking-related diseases — were estimated to be $303,300,000 for 1983. This figure increases the hidden costs of cigarettes by 66 cents per pack sold. Yet to be calculated are indirect costs from smoking-related *disability*.

Active Promotion of Nonsmoking in Minnesota

The Technical Advisory Committee report focuses on the promotion of nonsmoking, emphasizing the fact that *nonsmoking* has been the usual behavior throughout human history. Cigarette smoking was a majority phenomenon in this country only for a few decades for males (1930s to 1960s) and momentarily for females in the 1960s.[8] Nonsmoking is once again normative in the United States and in Minnesota — seven out of 10 adults are nonsmokers.

Three recommendations are particularly salient. The report calls for an increase in the state excise tax or 10 cents by 1986 with annual 5 cent increases for the succeeding five years. The proposed 35 cent increase within six years would effectively triple the present 18 cent excise tax. The major rationale for the proposed tax increase is based on research on the "price elasticity" of cigarettes; a 10% increase in cigarette price is associated with a 4-5% decrease in per capita cigarette consumption.[9] The impact of price elasticity is particularly strong for adolescent males; increased cigarette prices are associated with decreased numbers of male youth adopting the cigarette habit.[10]

The report calls for a professionally-produced, statewide public communications campaign to actively market nonsmoking. The multi-year campaign would be intended to match the quality and innovation of tobacco advertising for print media and outdoor advertising and have access to the television media.

The report calls for scientifically evaluated nonsmoking education for seventh grade students throughout Minnesota. "Peer-led", experiential curricula developed at the University of Minnesota and at other centers, focusing on the social influences to smoke and the short-term health consequences of cigarette smoking, appear to be effective in decreasing the rate of adoption of smoking behavior by adolescents.[11-13]

Highlights of the Recommendations of the Technical Advisory Committee on Nonsmoking and Health for Health Professionals

Within the context of the comprehensive array of recommendations, several are directed toward physicians and health care providers.

Physician Management of Patients who Smoke

One recommendation is targeted toward primary care physicians and provides an outline of the conduct of office visits to intervene effectively with patients who smoke. The office counseling model, described by Pechacek and Grimm[14] at the University of Minnesota, suggests that physicians treat smoking as a medical high risk condition. They are advised to obtain a detailed smoking history; to make the physical examination an intervention by focusing on cardiovascular and respiratory findings; to increase the impact and personalize the risk message through spirometric tests or through immediate analysis for carbon monoxide in a sample of expired air; to ask the patient to make a commitment to a specific quit date; to provide the patient with self-help materials; and to check-up on the patient's progress at the time of the quit date and at subsequent office visits. Office strategies for managing smoking behavior in patients are available from other sources as well.[15,16] Resources available to the physician include: (1) reprints of articles on patient management from the Minnesota Department of Health; (2) the Heart Attack Prevention Workshop produced by the Division of Epidemiology, University of Minnesota; and (3) physician education in smoking control which will become available to some state physicians through a National Cancer Institute grant to develop physician interventions on smoking behavior.

Health professionals can also encourage patients to use smoking cessation programs available in the community. Such programs may also be effective in promoting successful maintenance of smoking cessation.

The favorable impact of physician advice not to smoke has been shown in a randomized controlled trial.[17] The intervention group which received physician advice to quit smoking decreased cigarette consumption throughout a ten year follow-up period and mortality from coronary heart disease and lung cancer was reduced in this group.

Smoking Policies in Health Care Institutions

Several recommendations are presented for developing smoking policies at the Minnesota Department of Health, in hospitals, physician's offices, long term care institutions, and voluntary health organizations. The report calls for effective observance and enforcement of the Minnesota Clean Indoor Air Act (MCIAA) as a minimum standard. Health care institutions are advised to go beyond the provisions of the MCIAA and to develop and publicize policies which promote nonsmoking. Health care institutions are presented with the challenge and the guideline to become smoke-free by the year 1990.

The Minnesota Department of Health is revising smoking policies. A committee comprised of employee-elected representatives and Commissioner of Health-appointed representatives is considering the appropriate staged sequence of smoking policies.

Relevant to other health care institutions is a survey of patients at the University of Minnesota Hospitals assessing patient attitudes toward a smoke-free hospital environment.[18] The majority of patients surveyed favored a smoke-free hospital environment and viewed a smoke-free hospital as an indicator of improved patient care.

Health Care Institutions as Image Makers and Educational Resources on Smoking Policies

The report calls for health care providers and health care institutions to be more effective educational resources and image makers by becoming the vanguard in establishing restricted smoking policies and in moving toward a smoke-free environment. As a first step beyond compliance with the MCIAA, health care institutions should ban cigarette sales on their premises.

Additional steps have already been taken by the Minnesota Medical Association (MMA) and by the Park Nicollet Clinics. The MMA had recently adopted a policy to prohibit smoking in meetings, encouraging employees not to smoke while on the job or while representing MMA, and encouraging employees to quit by offering cessation programs and incentives. Smoking was banned in all public and patient care areas of the Park Nicollet Clinics on January 1, 1984. Employee smoking is restricted to designated smoking lounges for an interim period with future plans for a complete smoking ban on the clinic premises. Other health care institutions and organizations have also gone beyond the minimum provisions of the Minnesota Clean Indoor Air Act and the trend appears to be well underway.

Other Recommendations of Interest to Health Professionals

The report calls for health care providers involved in health promotion and disease prevention activities at the community level, to participate in — or initiate — campaigns to promote nonsmoking and to stimulate attempts to quit. For clinicians who see patients presenting with symptoms which are aggravated by passive exposure to cigarette smoke in the work environment, information on the options available to nonsmokers under the MCIAA may be useful to convey to these patients. For administrators of health care institutions with substantial numbers of smokers in the workforce, the economic recommendations which detail the costs of smokers to employers and suggest incentives to encourage nonsmoking are of interest.

As recommended by the Technical Advisory Committee, the Minnesota Department of Health has established a research database of cigarette smoking articles. Reprints are available upon request. In the future, the Minnesota Department of Health may also function as a referral source for direct education materials on smoking for physicians and for the public. Research scientists are available to assist physicians interested in evaluating the effectiveness of their education and intervention efforts with patients who smoke.

Obtaining Copies of the Report

"The Minnesota Plan for Nonsmoking and Health" is distributed by the Minnesota Center for Nonsmoking and Health, Minnesota Department of Health, 717 Delaware St. SE, Minneapolis, Minnesota, 55440. A shorter summary version of the report will be available soon and will be mailed in response to routine requests. Limited numbers of copies of the full report including the epidemiologic findings and rationale sections for each recommendation are also available upon request.

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Allegation

Negligent prescription of a prosthetic device due to physician error in charting.

Facts of Case

The patient first presented to Dr. X, an orthopedic surgeon, on February 26 and gave a history of prolonged back pain. Dr. X took standing X-rays which showed the patient's left leg to be ¾ inch shorter than the right. Dr. X recorded the proper information on the leg length section of the physical exam record, but in his narrative mistakenly reported that the right leg was shorter than the left. Erroneously, he gave the patient a prescription for heel and sole lifts for the right shoe.

Dr. X next saw the patient on April 2 when the patient was hospitalized for injuries suffered in a car accident. Because the patient had not gotten the shoe lifts, a new prescription was written again for the right leg. The patient was instructed to return to the clinic 3-4 weeks after obtaining the shoe lifts.

Dr. X did not see the patient after April 2, though he did attempt to call him on one occasion. Because the call was not documented in the clinic report, Dr. X does not recall the purpose of it. The patient, however, called Dr. Y, Dr. X's partner, on May 13, but Dr. Y refused to return the call since the patient had cancelled two appointments within the week.

On September 16, because the patient had repeatedly failed his scheduled appointments, the clinic sent him a letter denying him on-going medical care. On September 21, when the patient called the clinic, and the billing clerk refused to allow him to speak with his doctor, the patient threatened a lawsuit because of Dr. X's error in prescribing the shoe lifts.

Disposition

The patient filed a lawsuit in Conciliation Court for $875, the amount he incurred for subsequent medical treatment. The case settled for that amount.

Reason for Settlement

The patient was able to show that wearing the improper shoe lift exacerbated his pre-existing back condition.

Risk Management Comments

1. Many malpractice cases are lost because of errors in the medical records. Errors can occur because of carelessness brought on by the pressures of an exceptionally busy day, errors in dictation or transcription, etc. Physicians should make it a habit to proofread their entries on an on-going basis. In addition, periodic chart audits for accuracy may prove beneficial.

2. Physicians give much medical advice over the telephone, and many malpractice claims center on what was, or was not, said to the patient in the conversation. Documentation of phone calls is, therefore, essential in maintaining complete medical records. The chart note should include the date and time the call was made, the patient's reason for calling and the advice given by the physician.

3. Physicians and clinics, for many reasons, occasionally choose to sever their relationships with a particular patient. Abandonment occurs when a physician unilaterally severs the doctor-patient relationship without providing adequate notice and sufficent time for the patient to find a new physician. Therefore it is recommended that the patient be given adequate written notice of the discharge, preferably 30-45 days, during which time the physician should remain available to treat the patient.

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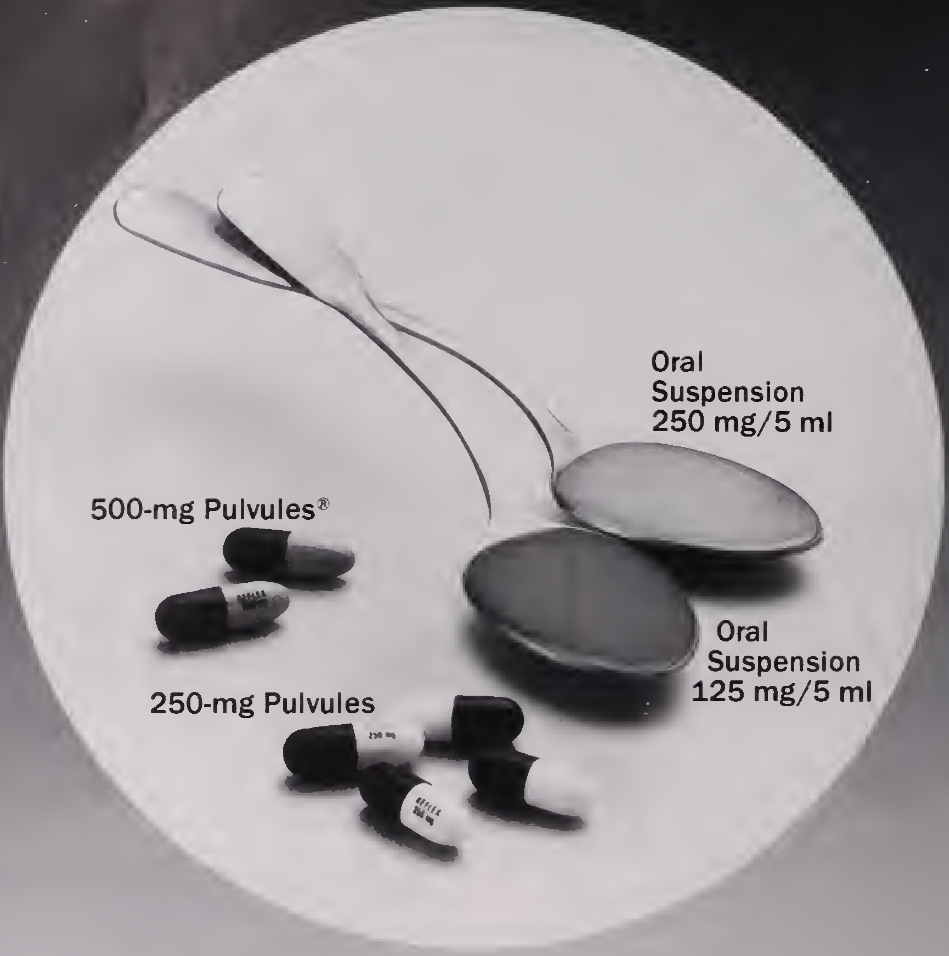

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History

Transfer of Greek Knowledge to Western Civilization

The Arab Connection

RAYMOND C. BONNABEAU, JR., M.D., Ph.D.*

Following the strides made by Greek civilization which culminated in the library and museum at Alexandria, and subsequent to the fall of Rome, the darkness of barbarism descended on Western Europe. Viewing the world rationally had started in the 6th Century B.C. in Greece, and it was in that culture that philosophy, astronomy, mathematics, and medicine had developed over a 1,000 year history. During the period of the so-called dark ages in Europe, this material was kept alive, nurtured, added to, and eventually brought back circuitously into the mainstream of Western thought through the Arab world.

Hellenism at the time of Christ had already spread westward as far as India, in the wake of the conquests of Alexander in the 4th Century B.C. During this period the subjugated provinces retained their integrity with Greek colonies (garrisons) scattered throughout. This culture remained even after Greece was supplanted by the Roman Empire. In countries such as Egypt, the ruling class spoke Greek and kept Greek customs, while the villages retained their own. Thus, Greek civilization had little influence on the average non-Greek citizen. This was true in Syria as well. There, however, the local language was a dialect of Aramaic (that of the City of Edessa) called Syriac. It was through this language that Greek thought was primarily carried to the Arab world and eventually to Europe.

This passage can be traced through several sources:

1. Through Christianity and Christian Syriac writers and scholars, the greatest and most direct route.
2. Indirectly through India, especially mathematics and astronomy, all further developed by Indian scientists.
3. Overland through the kingdom of Bactria, especially through the city of Marw.
4. In a minor way through Buddism and Judaism.

Christianity

As Christianity developed, it spread rapidly throughout the Roman Empire. There seems to have been two reasons for this; Christ's admonition to "Go teach all nations," and secondly church persecution. These active, organized persecutions started during Nero's time and were probably responsible for the formation of church life in many areas, such as Mesopotamia. Here settlement occurred chiefly about the City of Edessa. These early church writings and liturgies were in Greek, the earliest vernacular literature being produced in the Syriac dialect, long before they were translated into Latin. Early Christian thinking was also in Greek, and lent itself to an explanation of existence and other fundamental truths by the already existing and well-established patterns of Greek philosophical thought. Although the Christian church did inherit some aspects from Judaism, it was basically Hellenistic in origin. Thus, as Christianity moved throughout the Roman Empire in the first century after its birth, it was not only a religious, but a Hellenizing force as well.

The Great Debates on the Nature of Christ

The spread of Christianity and ultimately Greek thought also hinged on the three great heresies of the early church, which revolved about the nature of Christ.

Arianism

Arius was ordained in 310 A.D., and became a priest in Alexandria. Basically, he taught that God was the absolute being and was considered to be "incommunicable." If he were not, he would be corporeal, which he most certainly was not. Therefore, according to Arius, outside of God everything is created, including the word or Logos, i.e., Christ. He did not distinguish between person and nature and therefore felt that Christ was not the same essence as God. Christ was therefore finite. He did see him as the Logos produced by the will of God, but produced only as a creature. He considered him a man who had achieved perfection by his own holiness and will. Arius's teaching was formally condemned at the Council of Nicea in 325 A.D.

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*St. Paul, Minnesota.

Nestorianism

Nestorius was a monk who was called in 428 A.D. from Antioch to Constantinople. While there, a fellow monk, Anastasius, preached a dualist conception of Christ. He claimed there existed both a human and a divine nature. His human nature was complete at birth, the Logos or divine person entering later. This led to the expression that Mary was Christokos, not Theotokos, i.e., the mother of Christ the man, not the mother of God. Nestorius did talk of a moral union between the two complete persons, but as such would have negated the redemption as viewed from an orthodox view. This thesis was condemned at the Council of Ephesus in 431 A.D.

Monophysitism

Initially this belief went back to about 360 A.D. The important upheaval at this time was still Arianism, which was attacked by Apollinaris, an anti-Arian bishop of Laodicea, in an attempt to safeguard the unity of Christ. He could not accept two separate natures in Christ, as stated by Arius. He also knew that the redemption depended on Christ actually being God. Consequently, he reasoned that one complete nature is one person. Therefore, if the Logos was joined to a man, the divine nature by necessity being complete, the humanity could not be complete, i.e., there was no human soul. This had been replaced by the Logos. This thinking was later resurrected as a reaction to the Nestorian heresy, only in multiple forms. This heresy which emphasized Christ's divinity (Logos) was condemned at the Council of Chalcedon in 451 A.D.

The Passage of Hellenistic Ideas

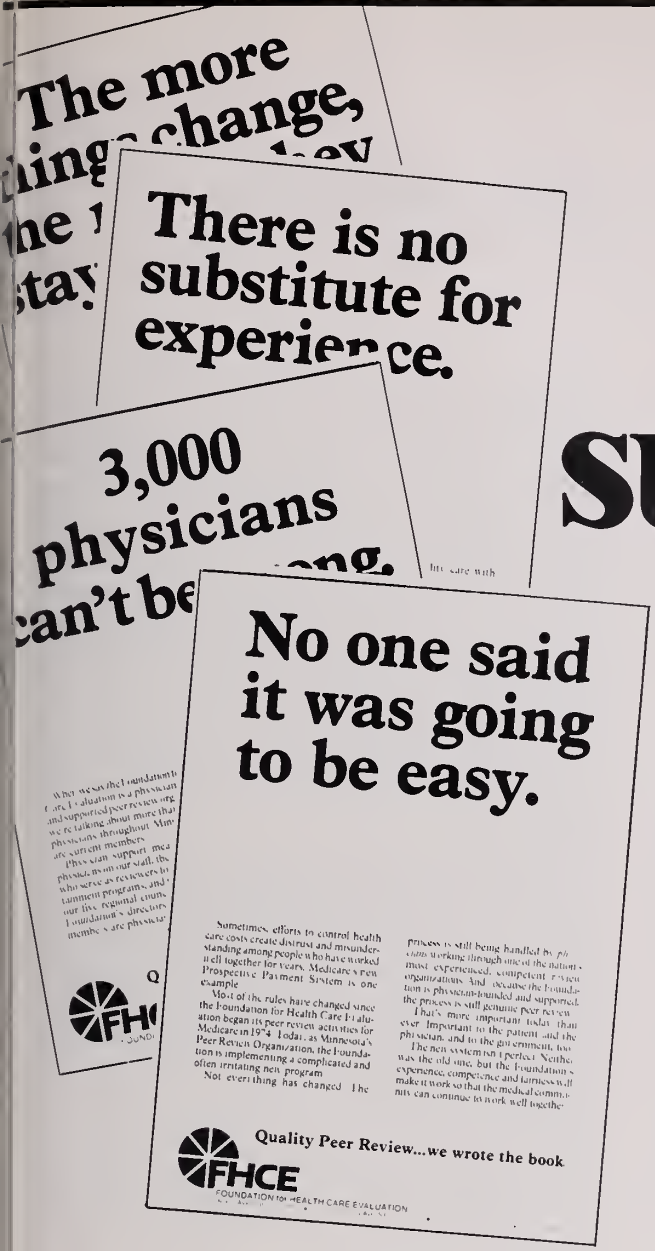
In the year 325 A.D., two schools were founded at Antioch and Nisibis along the lines of Alexandria, primarily to bring Greek theology to Syriac-speaking Christians. In both schools Greek texts were translated into Syriac for this specific purpose. Eventually both schools closed, Antioch in 379 A.D., due to the effect of Arian Christians who were politically important in the city, and Nisibis in 363 A.D., after Rome had politically given the area back to Persia. Ephraem, the leader in Nisibis, then migrated to Edessa, as did at a later date many who were involved with the Antioch school. Ephraem opened a school in Edessa in 363 A.D. which functioned largely undisturbed until the Nestorian heresy of 428 A.D. Since those at Edessa supported Nestorius, the school was eventually closed. Many of those influential scholars relocated back to Nisibis in 489 A.D., where a university was opened. They were welcomed at that time by the Persians. Others scattered into India and China while still others settled in Jundi Shapur, where in the 6th Century Khusraw I established an academy similar to Alexandria after the European Justinian had closed the schools in Athens. This university at Jundi Shapur, with its hospital which also functioned as a medical school, became one of the leading intellectual centers of the time. Many of its teachers were the Nestorian Christians and displaced Greeks from the Athens school. The curriculum was similar to that of Alexandria and included the works of Galen, Aristotle, and Hippocrates, all translated into Syriac. Contact was also made with India where medications as well as physicians were introduced.

Those involved with the Monophysite heresy also were involved in this transfer in a less direct way. Following the Council of Chalcedon (451 A.D.), their members also fled eastward but tended to settle into monastic communities. Communities were associated with Edessa, Alexandria, and Marw. All would contribute to the interchange of knowledge with the Arab world.

Following the emergence of Islam as a military and religious power in the early 7th century, Jundi Shapur fell to the Arabs in 636 A.D. The university was undisturbed and its medical school was made their principal training center. In the year 749 A.D., the Arab caliphate moved from Damascus to Baghdad, and the physicians to the caliph were taken from Jundi Shapur, which was in near proximity. In the early 9th century, a school of translation was opened in Baghdad, under the Caliph Al Mamun, and Greek texts were avidly translated into Syriac and Arabic. This included Galen, Hippocrates, Plato, Aristotle, and others. The foremost of these translators was Hunain Ibn Ishaq, a Nestorian Christian from Hina.

The Route from India

Greek influence came to the Arabs also via a sea route from Alexandria to northwest India. It was there developed more fully and transmitted in a more developed fashion during the Abbasid caliphate at Baghdad. The overland route was also important through Bactria and the city of Marw. This was an important outpost of Hellenism and contained, as previously mentioned, many Nestorian as well as Monophysite Christians. This area also had a strong Buddhist minority at the time of Arab conquest, many of whom were converted to Islam. Thus, the Barmakids associated with the city of Marw after having moved from Bactria were of prime importance in the Abbasid revolution that established the Abbasid caliphate in Baghdad and led to the dominance of Persian influence. It was also from Marw through a Jewish influence that Greek astronomy and mathematics were brought to Baghdad for Arabic translation.



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Society, Medicine, and the Rural Poor

"What Shall We Do About the Selways?"

RONALD E. PUST, M.D.*

It was when we moved into town so that I could start the first grade that I first had to figure what to do about the Selways. Back in the late 1940s that Montana town seemed to be lost in the wide austere expanses of open dry land that shaped our lives with its howling cold winters, unpredictable rain and predictable hail storms. Lormont was where it was, so they said, because that's where the railroad went. It even moved once in its early days, around World War 1, when the railroad came through and missed it by a couple of miles. So they all packed up and moved to the tracks. The railroad started at Wentworth and ran through Montana prairie, past Lormont, and on out to Recton, 28 miles to the west. There it stopped. Still stops there. In those early days, they said, Lormont had 2,000 people. Almost every one of them came by the railroad.

But everyone knew where they had come from. We were mostly "ethnics," Scandinavians and Middle Europeans, who immigrated by way of Minnesota to stake out the last free homesteads in the entire country. So we all had our roots and values and they were pretty much shaped by our immigrant past and the will to "make a living on the dry land." That is, we all had a history except the Selways. When did they come? Nobody was sure. At least we didn't think they had come from Minnesota, like the rest of us. Whether the Selways came on the railroad or not we didn't know.

One thing was sure, though. Old George Selway worked for the railroad. Unlike the rest of us, who were working on the land, George worked out of Lormont on the railroad crew that fixed the tracks. We didn't meet George at the grain elevator every day. For, being a railroad man, he didn't have any grain to sell, and since he didn't have any land, of course he didn't have any worries about whether the crop that year was going to be good enough to pay the land taxes. We envied him for that.

But the Selways did have a house. Their house was in a choice location, right in the middle of town. Now you have to realize that all of Lormont was equal to about nine square blocks. Their house was right in the middle of the middle block. Even in that middle block, land in Lormont was pretty easy to come by, it not being so crowded anymore, with the population having shrunk from 2,000 down to 150 during the Depression. So here in the middle of the middle block was the Selway house. Not being on any of the streets, it was surrounded on all sides by a "no man's land," a kind of "demilitarized zone." That way you didn't have to exactly walk right by it on the way to anywhere else in town. It wasn't completely clear who had established the DMZ, whether it was the Selways or the rest of us. But everyone seemed to like it that way. The DMZ was strewn with broken bicycles, broken cars, broken dishes, old bed springs, and a helter-skelter of wood pile — the family's fuel supply.

There was a very limited number of the local citizenry who could describe the inside of the Selway's house. It was only special, unusual, and perhaps unnatural relationships that would give anyone reason to have seen the inside. But we all knew a little about the Selways, and surmised more. We each dealt with what we didn't know a little bit differently. We knew that old George worked for the railroad, our great link to Minneapolis and the ultimate source of all-too-slowly-growing wealth. But the big question for anyone who wanted to look toward the future of Lormont and hoped to see it improve was, "What shall we do about the Selways?"

Most people who took that question seriously had to answer another question, of course: "How did the Selways get that way?" Theories abounded. Some thought it was because old George and Mary had too many kids. There must have been about six. There was George, Jr., and there was Betty, and Charles and Reuben and a couple of others I can't remember. Still, that was the way all of us kids learned about the Selways. Each of us must have had one of them in our class. It was the reason that us kids were the only ones who knew what the inside of the Selways house really looked like. Because we all at one time or another found spontaneous relationships that transcended the unwritten assumption that we wouldn't have any reason to go to the Selways' house. So we knew that the inside was tarpaper, that there were four rooms, one not so small, and the three small ones partitioned off on the west side by clothes that the family shared, and that there was a wood stove in the "big room." The house was kind of built up on stilts, about two feet off the ground. And the outside had been shingled, not only the roof but the sides as well.

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Author's Note: Names have been changed to conceal identities.

So we knew the kids. They were the kind of kids whose picture was in the yearbook every year with the rest of the class. But they never seemed to get into the graduating class with the pictures where they put down underneath the picture all of the illustrious things that you did in high school. Not that some of them didn't do pretty good. A couple of the boys made it onto the basketball team, which wasn't hard to do since there were only about a dozen boys in high school anyway. Everybody always knew the number on your basketball jersey in Lormont. It was your main claim to fame, even though the team did not win a whole lot of games. Everybody seemed to know what number the Selways wore, especially some of the mothers. Their worry that you would inherit a less-than-immaculate jersey next year sometimes became your worry, too. So maybe the trouble with the Selways was that they had so many kids. They were not the biggest family in town. The Dortons had twelve kids, and the Renbergs had fifteen.

Well, maybe it was because, like old Pork Dorton, George Selway drank too much. Because some of us weren't in the drinking crowd, we couldn't vouch 100% for that, but we did see him go in the tavern lots of times. Still, Old George wasn't the biggest drinker in town; the town grocer, whose store was across the main street from one of the two taverns, drank a lot more. In fact, sometimes he never made it all the way back across the street. Since, of course, there weren't any traffic lights, it was kind of an occupational hazard for Lute, the Scandinavian grocer, to get back to his store. We all praised the Lord that the majority of his several beautiful daughters were good Christians.

Maybe the trouble with the Selways was that they did not take care of themselves. After all, they were dirty and there were a number of diseases it was said you could get if you wore their cap — or inherited their basketball jersey. It was even said that George used to be in the hospital every once in a while down at the county seat. They guessed it was Dr. Herman, the county's doctor, who looked after him there. We didn't go to Dr. Herman.

Well, maybe it might have been because they took in too many friends. For a family that you did not think had any relatives or roots, there were lots of times when there were even more than the eight or ten Selways crowded within the DMZ. Like the time the Jernigans came. They stayed for over a year. At least some of them. The Selways didn't have enough to go around. Maybe they should have done something about the Jernigans.

Another, but smaller group thought it might be because they were too lazy. That seemed logical because most of the time the Selway boys were hanging around town, instead of working on the farm like those of us whose fathers owned land.

With so many competing theories, it was a bit bewildering for us kids to figure out what the trouble was with the Selways. But lack of a clear answer as to what the trouble was did not prevent us from trying to help them out of it. I can remember five or six different times that people seemed to have the answer. Some of the answers came from the churches. Now you have to realize that there are three quite distinct churches in Lormont and the Selways household was at equal distance from all of them, right in the middle. So, they certainly were an accessible project.

First thing I remember was the time we were having the Sunday School attendance contest. Without all that many people in Lormont to draw on, how could you win a Sunday School attendance contest? Well, one of the more daring answers would be to invite the Selways kids. So I remember that day when we had 103 in Sunday School, setting a new record. At least some of the Selways kids and maybe even their mother, Mary, were among the congregation. That didn't last long.

Nearly every drunk in town had been saved at least once. Still, it was hard to imagine how George Selway would ever get saved. It wasn't that God had no power. It was that George had no constituency. Nearly every other one of the drunks in town had a wife or other relatives in the church, praying. So there was some point of connection, somebody who would be benefitting when they got saved. Not so with George. Then there was the embarrassment when one of these several local gentlemen would walk into church in his slightly inebriated condition. No, George would have been too big a prize — and too big a risk.

If cleanliness was next to godliness, then perhaps at least we could clean up the "outside of the cup;" so there were several clothing drives organized, aimed mostly at the children. That gave us a chance to get rid of our Big Mac bib overalls that we had outgrown, and that seemed a worthy cause. But the ultimate effort was to get the house itself cleaned up. Several alternatives were raised. But one day to the surprise of everyone, it was the Selways themselves that moved — to the southwest corner of the middle block!

There the house was on higher stilts, on a higher knoll — and just across the street from the Lutheran church. Closer to the street, the DMZ, of course, shrank, but the Selways' visibility rose. Not the hoped-for solution! In fact it was even the same old house. The vision of the city fathers for a Lormont Park was decimated for a long time.

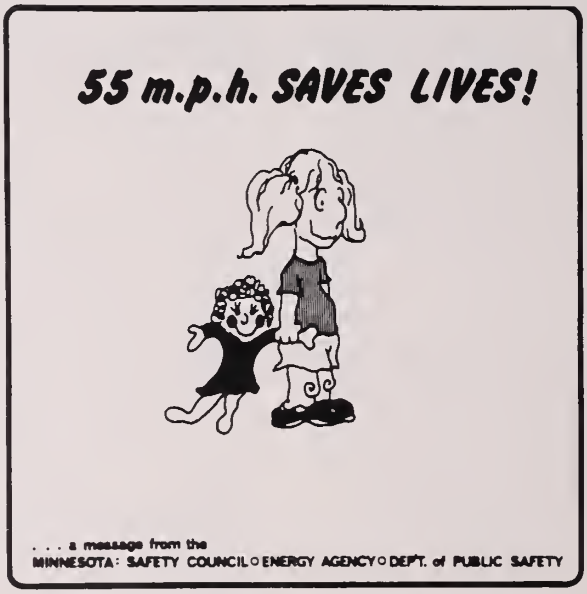
Maybe the public health nurse could improve conditions. After all, she did have a *raison de entre*, and she also had those immunizations that would keep the Selways from passing on any of those diseases that we had heard about. So the public health nurse, Arlene Renberg, kept them immunized and us reassured. Maybe, though, it was because she herself was from the family of fifteen, that she had neither the tenacity nor the perspective as to what more we should do about the Selways.

Well, if old George just drank up the good wage the railroad, we were sure, was paying him, maybe we should hire the Selway boys to work on the farm. Maybe full employment was the answer. Some of the farmers did give it a thought. But it never seemed to work out for long. You had to go all the way into Lormont to get them. They never had their own pickup to come out to the farm in the morning. And you were not sure whether you wanted to give them your own bunkhouse. So the day was half shot when they got to work. It was rumored that they didn't last anyway because they "weren't much for farm work" or they "didn't have any experience." And then, it was known that George Jr. had spent a few days in jail, so despite his being pretty tall and looking pretty strong, at least to a fourth grader, he didn't seem to get hired anymore after that.

There were other theories and other solutions. But mostly, in the end, we decided that we were just kidding ourselves. After all, the Selways were different from us. And we really didn't have any reason to interfere in their affairs.

I went back to Lormont a few months ago. It's not any bigger. Still just about 150 people. But they have the main street paved now. They have the new town park, and people remark that Lormont's been cleaned up a lot. The new Lormont museum, where the *Lormont Leader* used to be published, displays the medical instruments of Dr. George Cudahy, Lormont's first and only doctor, long since departed. But the two taverns and the three churches are still there. They look about the same. So do the grain elevators, loading the grain onto the boxcars George Selway's railroad brings in.

Where are George and Mary and all the Selway kids? No one seems to know. One thing is for sure. That middle block looks a lot better. The railroad's section repair crew doesn't work out of Lormont anymore. They moved the repair crew down to Recton — the end of the line. Some say that George went with them. Some say he is in jail — or that he died there. You could ask Dr. Herman, the county's doctor, some say. Maybe he would know.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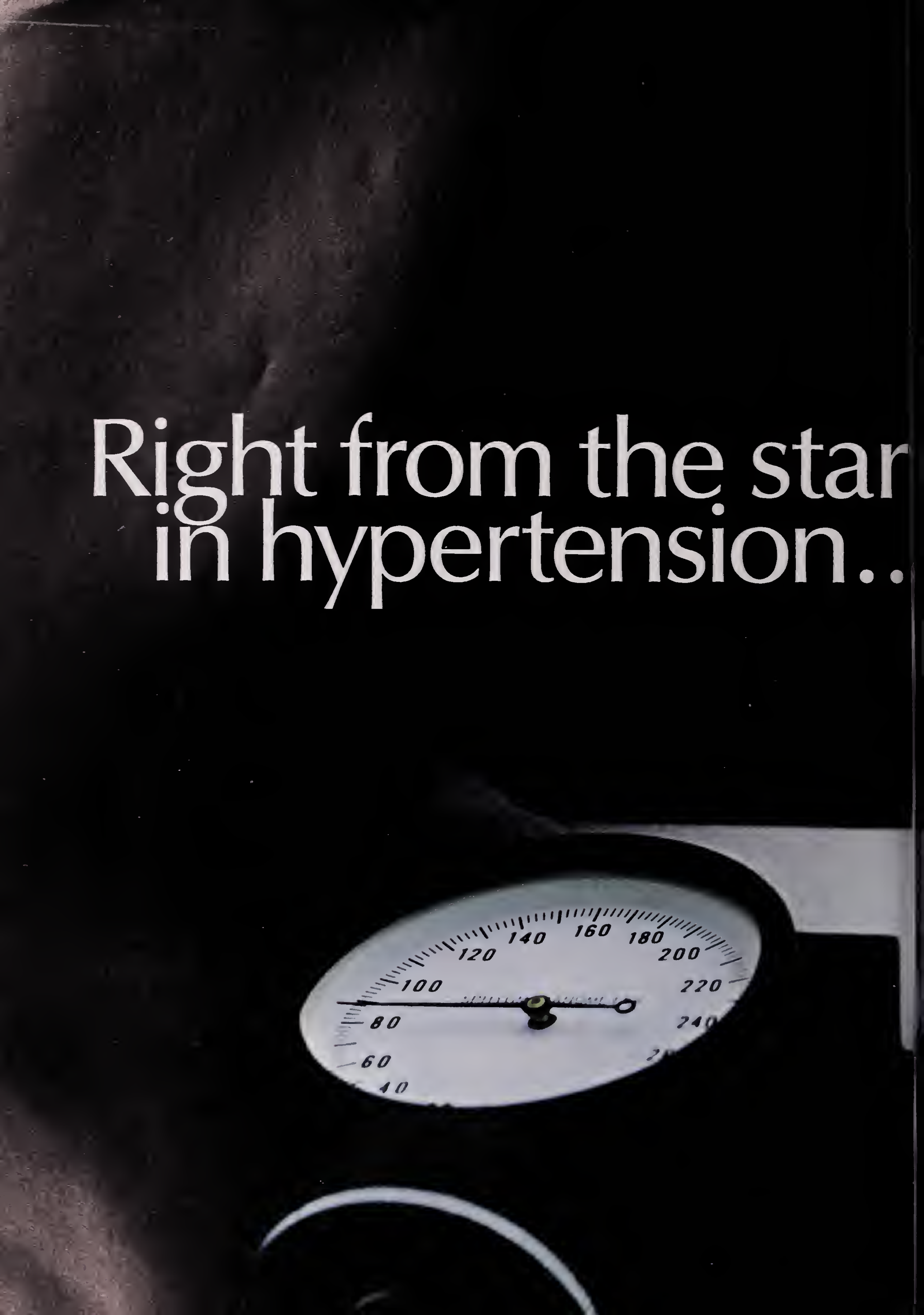
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(PROPRANOLOL HCl) LONG ACTING CAPSULES

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Please see brief summary of prescribing information on the next page for further details.

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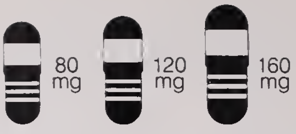

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BRIEF SUMMARY *(FOR FULL PRESCRIBING INFORMATION, SEE PACKAGE CIRCULAR.)*
INDERAL® LA brand of propranolol hydrochloride **(Long Acting Capsules)**

DESCRIPTION. Inderal LA is formulated to provide a sustained release of propranolol hydrochloride Inderal LA is available as 80 mg, 120 mg, and 160 mg capsules

CLINICAL PHARMACOLOGY. INDERAL is a nonselective beta-adrenergic receptor blocking agent possessing no other autonomic nervous system activity It specifically competes with beta-adrenergic receptor stimulating agents for available receptor sites When access to beta-receptor sites is blocked by INDERAL the chronotropic inotropic, and vasodilator responses to beta-adrenergic stimulation are decreased proportionately

INDERAL LA Capsules (80, 120, and 160 mg) release propranolol HCl at a controlled and predictable rate Peak blood levels following dosing with INDERAL LA occur at about 6 hours and the apparent plasma half-life is about 10 hours When measured at steady state over a 24-hour period the areas under the propranolol plasma concentration-time curve (AUCs) for the capsules are approximately 60% to 65% of the AUCs for a comparable divided daily dose of INDERAL tablets The lower AUCs for the capsules are due to greater hepatic metabolism of propranolol, resulting from the slower rate of absorption of propranolol Over a twenty-four (24) hour period, blood levels are fairly constant for about twelve (12) hours then decline exponentially

INDERAL LA should not be considered a simple mg for mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose When changing to INDERAL LA from conventional propranolol, a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval In most clinical settings, however, such as hypertension or angina where there is little correlation between plasma levels and clinical effect, INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate systolic pressure and rate pressure product. INDERAL LA can provide effective beta blockade for a 24-hour period

The mechanism of the antihypertensive effect of INDERAL has not been established Among the factors that may be involved in contributing to the antihypertensive action are (1) decreased cardiac output, (2) inhibition of renin release by the kidneys, and (3) diminution of tonic sympathetic nerve outflow from vasomotor centers in the brain Although total peripheral resistance may increase initially, it readjusts to or below the pretreatment level with chronic use Effects on plasma volume appear to be minor and somewhat variable INDERAL has been shown to cause a small increase in serum potassium concentration when used in the treatment of hypertensive patients

In angina pectoris, propranolol generally reduces the oxygen requirement of the heart at any given level of effort by blocking the catecholamine-induced increases in the heart rate, systolic blood pressure, and the velocity and extent of myocardial contraction Propranolol may increase oxygen requirements by increasing left ventricular fiber length, end diastolic pressure and systolic ejection period The net physiologic effect of beta-adrenergic blockade is usually advantageous and is manifested during exercise by delayed onset of pain and increased work capacity

In dosages greater than required for beta blockade, INDERAL also exerts a quinidine-like or anesthetic-like membrane action which affects the cardiac action potential. The significance of the membrane action in the treatment of arrhythmias is uncertain

The mechanism of the antimigraine effect of propranolol has not been established Beta-adrenergic receptors have been demonstrated in the pial vessels of the brain.

Beta receptor blockade can be useful in conditions in which, because of pathologic or functional changes, sympathetic activity is detrimental to the patient But there are also situations in which sympathetic stimulation is vital For example, in patients with severely damaged hearts, adequate ventricular function is maintained by virtue of sympathetic drive which should be preserved In the presence of AV block, greater than first degree, beta blockade may prevent the necessary facilitating effect of sympathetic activity on conduction Beta blockade results in bronchial constriction by interfering with adrenergic bronchodilator activity which should be preserved in patients subject to bronchospasm.

Propranolol is not significantly dialyzable

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension; it may be used alone or used in combination with other antihypertensive agents, particularly a thiazide diuretic INDERAL LA is not indicated in the management of hypertensive emergencies.

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris.

Migraine: INDERAL LA is indicated for the prophylaxis of common migraine headache The efficacy of propranolol in the treatment of a migraine attack that has started has not been established and propranolol is not indicated for such use.

Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis, especially for treatment of exertional or other stress-induced angina, palpitations, and syncope INDERAL LA also improves exercise performance The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation. Clinical improvement may be temporary

CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock, 2) sinus bradycardia and greater than first degree block, 3) bronchial asthma, 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL.

WARNINGS. CARDIAC FAILURE: Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure, and its inhibition by beta blockade may precipitate more severe failure Although beta blockers should be avoided in overt congestive heart failure, if necessary, they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics. Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE, continued use of beta blockers can, in some cases, lead to cardiac failure Therefore, at the first sign or symptom of heart failure the patient should be digitalized and/or treated with diuretics, and the response observed closely, or INDERAL should be discontinued (gradually, if possible)

> IN PATIENTS WITH ANGINA PECTORIS, there have been reports of exacerbation of angina and, in some cases, myocardial infarction, following abrupt discontinuance of INDERAL therapy Therefore, when discontinuance of INDERAL is planned the dosage should be gradually reduced over at least a few weeks, and the patient should be cautioned against interruption or cessation of therapy without the physician's advice If INDERAL therapy is interrupted and exacerbation of angina occurs, it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris Since coronary artery disease may be unrecognized, it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications

Nonallergic Bronchospasm (e.g., chronic bronchitis, emphysema)— PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors

MAJOR SURGERY The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial It should be noted, however, that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures

INDERAL (propranolol HCl), like other beta blockers, is a competitive inhibitor of be receptor agonists and its effects can be reversed by administration of such agents, e dobutamine or isoproterenol However, such patients may be subject to protracted sev hypotension. Difficulty in starting and maintaining the heartbeat has also been reported w beta blockers

DIABETES AND HYPOGLYCEMIA: Beta-adrenergic blockade may prevent the a pearance of certain premonitory signs and symptoms (pulse rate and pressure changes acute hypoglycemia in labile insulin-dependent diabetes In these patients, it may be m difficult to adjust the dosage of insulin

THYROTOXICOSIS: Beta blockade may mask certain clinical signs of hyperthyroidis Therefore, abrupt withdrawal of propranolol may be followed by an exacerbation of sympto of hyperthyroidism, including thyroid storm Propranolol does not distort thyroid function tes

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME, several cases have be reported in which, after propranolol, the tachycardia was replaced by a severe bradycar requiring a demand pacemaker. In one case this resulted after an initial dose of 5 propranolol

PRECAUTIONS. *General:* Propranolol should be used with caution in patients with impair hepatic or renal function INDERAL (propranolol HCl) is not indicated for the treatment hypertensive emergencies

Beta adrenoreceptor blockade can cause reduction of intraocular pressure Patie should be told that INDERAL may interfere with the glaucoma screening test Withdrawal m lead to a return of increased intraocular pressure

Clinical Laboratory Tests. Elevated blood urea levels in patients with severe heart diseas elevated serum transaminase, alkaline phosphatase, lactate dehydrogenase

DRUG INTERACTIONS Patients receiving catecholamine-depleting drugs such as res pine should be closely observed if INDERAL is administered The added catecholami blocking action may produce an excessive reduction of resting sympathetic nervous act which may result in hypotension, marked bradycardia, vertigo, syncopal attacks, or orthosta hypotension

Carcinogenesis, Mutagenesis, Impairment of Fertility: Long-term studies in animals ha been conducted to evaluate toxic effects and carcinogenic potential. In 18-month studies both rats and mice, employing doses up to 150 mg/kg/day, there was no evidence of signific drug-induced toxicity There were no drug-related tumorigenic effects at any of the dosa levels Reproductive studies in animals did not show any impairment of fertility that w attributable to the drug

Pregnancy: Pregnancy Category C. INDERAL has been shown to be embryotoxic animal studies at doses about 10 times greater than the maximum recommended human dos

There are no adequate and well-controlled studies in pregnant women. INDERAL sho be used during pregnancy only if the potential benefit justifies the potential risk to the fet

Nursing Mothers. INDERAL is excreted in human milk Caution should be exercised wh INDERAL is administered to a nursing woman.

Pediatric Use: Safety and effectiveness in children have not been established

ADVERSE REACTIONS. Most adverse effects have been mild and transient and ha rarely required the withdrawal of therapy

Cardiovascular: bradycardia, congestive heart failure, intensification of AV block, hyp tension; paresthesia of hands, thrombocytopenic purpura, arterial insufficiency, usually of Raynaud type

Central Nervous System: lightheadedness; mental depression manifested by insomn lassitude, weakness, fatigue; reversible mental depression progressing to catatonia vis disturbances, hallucinations; an acute reversible syndrome characterized by disorientation time and place, short-term memory loss, emotional lability, slightly clouded sensorium, a decreased performance on neuropsychometrics

Gastrointestinal: nausea, vomiting, epigastric distress, abdominal cramping, diarrhe constipation, mesenteric arterial thrombosis, ischemic colitis.

Allergic: pharyngitis and agranulocytosis, erythematous rash, fever combined with achi and sore throat, laryngospasm and respiratory distress

Respiratory. bronchospasm

Hematologic: agranulocytosis, nonthrombocytopenic purpura, thrombocytope purpura.

Auto-Immune: In extremely rare instances, systemic lupus erythematosus has be reported

Miscellaneous: alopecia, LE-like reactions, psoriasiform rashes, dry eyes, male imp tence, and Peyronie's disease have been reported rarely Oculomucocutaneous reactio involving the skin, serous membranes and conjunctivae reported for a beta blocker (practo have not been associated with propranolol

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hydrochloride in sustained-release capsule for administration once daily If patients are switched from INDER tablets to INDERAL LA capsules, care should be taken to assure that the desired therapeu effect is maintained INDERAL LA should not be considered a simple mg for mg substitute f INDERAL. INDERAL LA has different kinetics and produces lower blood levels Retitration m be necessary especially to maintain effectiveness at the end of the 24-hour dosing interv

HYPERTENSION—*Dosage must be individualized* The usual initial dosage is 80 m INDERAL LA once daily, whether used alone or added to a diuretic The dosage may increased to 120 mg once daily or higher until adequate blood pressure control is achieve The usual maintenance dosage is 120 to 160 mg once daily. In some instances a dosage of 6 mg may be required The time needed for full hypertensive response to a given dosage variable and may range from a few days to several weeks.

ANGINA PECTORIS—*Dosage must be individualized* Starting with 80 mg INDERAL once daily, dosage should be gradually increased at three to seven day intervals until optimu response is obtained Although individual patients may respond at any dosage level t average optimum dosage appears to be 160 mg once daily In angina pectoris, the value a safety of dosage exceeding 320 mg per day have not been established

If treatment is to be discontinued, reduce dosage gradually over a period of a few wee (see WARNINGS)

MIGRAINE—*Dosage must be individualized.* The initial oral dose is 80 mg INDERAL once daily The usual effective dose range is 160-240 mg once daily The dosage may increased gradually to achieve optimum migraine prophylaxis. If a satisfactory response is obtained within four to six weeks after reaching the maximum dose, INDERAL LA thera should be discontinued It may be advisable to withdraw the drug gradually over a period several weeks.

HYPERTROPHIC SUBAORTIC STENOSIS—80-160 mg INDERAL LA once daily

PEDIATRIC DOSAGE—At this time the data on the use of the drug in this age group are limited to permit adequate directions for use.

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Cimetidine and the Elderly Patient

GERMAN L. SOLIS, B.S.*

CIMETIDINE IS WIDELY prescribed to decrease gastric acid secretion in a variety of gastrointestinal disorders. It has been approved for the prophylaxis and treatment of duodenal ulcers and for the treatment of benign gastric ulcers, hypersecretory states (e.g. Zollinger-Ellison syndrome) and the gastrointestinal sequelae of systemic mastocytosis and multiple endocrine adenomatosis. The kinetics of Cimetidine with particular attention to the elderly is described below.

Absorption

Cimetidine can be administered orally, intravenously or intramuscularly. The oral bioavailability of Cimetidine is approximately 70% and "younger patients usually absorb the drug better than elderly individuals."[16] Bioavailability is essentially the same after intravenous or intramuscular injections and there is no significant difference in bioavailability between patients with normal renal function and those with impaired renal function.[4] The drug is well absorbed from the small intestine and peak blood levels are reached 60 to 90 minutes after an oral dose. No significant difference in time to reach peak concentration following oral administration is seen with increasing age.[10]

Blood Cimetidine concentrations of 0.5 to 1.0 mg/mL have produced a 50% reduction of stimulated acid secretion and an 80% reduction of basal acid secretion which are often cited as therapeutic goals.[1,3] Food delays the rate but not the extent of absorption; therefore, Cimetidine should be administered with or just after meals to take advantage of the acid buffering effect of food and to prolong the drug's effect during the postprandial period.

Distribution

Cimetidine penetrates well into the majority of body tissues with the exception of adipose tissue where distribution is negligible.[3] The highest Cimetidine concentrations occur in the kidney, gastrointestinal tract and liver.[3,6] It has been shown that Cimetidine crosses the blood-brain barrier in normal subjects.[6,8] Increased CNS penetration may occur in patients with severe illness, especially liver disease and uremia.[2,6,8] It is possible that mental status changes associated with Cimetidine may be due to a blockade of Histamine H_2 receptors in the central nervous system. Volume of distribution is 2.1 ± 1 L/Kg and no changes in Vd are found with increasing age.[3,6]

Metabolism

Cimetidine has been shown to be excreted in the urine as both metabolites and unchanged drug. Approximately 30% of an intravenous dose is metabolized. The major metabolite is the sulfoxide, which accounts for 10 to 20% of the Cimetidine dose; 5-hydroxymethyl and amide Cimetidine derivatives have also been identified.[3,12] Cimetidine metabolism may be impaired in uremic patients.[4,12]

Plasma-Protein Binding

Cimetidine is approximately 13 to 25% plasma protein bound, which is pharmacologically unimportant.[3]

Renal Elimination

Approximately 48% of an oral dose and 75% of an intramuscular or intravenous dose are excreted unchanged in the urine. Most of the remainder is recovered in the urine as sulfoxide metabolites. The drug is eliminated by glomerular filtration and tubular secretion. It has been estimated that Cimetidine is 66% to 75% eliminated by tubular secretion.[3,5] Renal clearance of Cimetidine decreases with advancing age and in patients with impaired renal function; therefore, dosage adjustments must be made in patients with renal insufficiency. Tentative guidelines for Cimetidine dosage which have been proposed are shown below:

Table 1
Dosage Schedule for Cimetidine in Patients with Renal Insufficiency*

	Creatinine Values		
C1 creatinine (ml/min)	0-20	20-40	>40
	Cimetidine dosage		
Cimetidine/6 hours	150 mg	225 mg	300 mg
Alternate schedule	300 mg/ 12 hours	300 mg/ 8 hours	300 mg/ 6 hours

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*Pharm D. Resident, College of Pharmacy, University of Minnesota.

*Based on data from Luk et al.[13]

Half-life

Serum half-life is 2.1±1 hours in patients with normal and renal function. Patients with renal impairment or liver disease have longer half-lives. Mean serum half-life has been reported to be approximately 2.9 hours in liver disease, 4.8 hours in renal failure and 6.7 hours in renal and liver disease.[6]

Drug Interactions/Contraindications

Antacids and metoclopramide reduce the oral bioavailability of Cimetidine by about 25% to 30%;[9,16] therefore, Cimetidine should be given at least one hour before or after administration of either antacids or metoclopramide. The absorption of ketoconazole and aspirin is reduced by approximately one half when these drugs are administered with Cimetidine[9].

Cimetidine inhibits drug metabolizing microsomal enzymes (cytochrome P-450 oxidative system) and reduces hepatic blood flow. The drug's inhibitory action prolongs the hepatic metabolism of many drugs, including Warfarin, Phenytoin, Theophylline, Carbamazepine, Phenobarbital, Propranolol, Diazepam, Chlordiazepoxide and probably Prazepam and Clorazepate. Cimetidine does not interfere with the metabolism of benzodiazepines such as Lorazepam and Oxazepam which are eliminated almost entirely by glucuronidation and not oxidation.[2,9] Reduced hepatic blood flow has been reported to decrease the clearance of and therefore increase the effects of Morphine, Propranolol and Lidocaine.[2,3,9,14,15]

The most important clinical consequences of interactions with Cimetidine primarily involve inhibition of drug metabolism. Clinically important interactions are predominantly manifested in those drugs which have a narrow therapeutic index (e.g. phenytoin, warfarin, theophylline). The interaction leads to higher steady-state blood concentrations and hence increases the incidence of side effects and toxicity. Adverse effects of such interactions can be avoided by careful monitoring and adjustment of dosage for those drugs which undergo first pass metabolic detoxification in the liver when it is necessary to administer such drugs concomitantly with Cimetidine[9]. There are no known absolute contraindications to the use of Cimetidine in the elderly.

Dosage Considerations

Dosage adjustments are recommended for patients with impaired renal function. Some studies have shown as age-related decline in total Cimetidine plasma clearance which has been attributed to a decrease in renal function and changes in body composition.[7,8,10] These studies show that even in normal elderly patients there is a decrease in Cimetidine plasma clearance and the Cimetidine dose should be adjusted with advancing age.[7,8,10] This may become even more important since CNS symptoms are more frequent in elderly patients. Tentative guidelines for Cimetidine dosage based on age are shown below:

TABLE 2*

Recommended Maintenance Dosage Regimen of Cimetidine based on Age in Patients without Renal Failure (BW = 70 Kg, males).

Age (years)	Maintenance dose (mg)	Dosing interval
35	300	6
45	200	6
55	200	6
65	200	8
75	100	6
85	100	12

*Based on data from W.A. Ritschel.[7]

Clinical Comments

Cimetidine, a histamine H_2-receptor antagonist, inhibits basal and nocturnal acid secretion and secretion induced by food and all other known gastric acid stimuli such as histamine, pentagastrine, insulin and caffeine. An oral dose of 300 mg raises basal gastric pH to at lest 5.0 for more than two hours in most patients and more than 90% inhibition of acid secretion occurs for four hours after administration. The same dose increases nocturnal basal gastric pH to 5.0 or higher in most patients for three to four hours and acid secretion is inhibited by a mean of 90% for seven hours. A 300 mg dose before a standard meal raises the mean gastric pH to 3-4 for 3 hours and to about six after four hours.

Cimetidine may not be more effective than an adequate intensive course of antacids in patients with reflux esophagitis, gastric ulcer and duodenal ulcer or in the prophylaxis of stress induced ulceration and hemorrhage. Cimetidine increases the risk of toxicity of other drugs commonly used in the elderly population such as Diazepam, Chlordiazepoxide, Propranolol, Theophylline and others. Elderly patients taking Cimetidine are at risk of neuropsychiatric changes which are described below.

Adverse Reactions

Elderly patients, especially those with impaired renal function or associated severe medical illness are more susceptible to develop adverse reactions from Cimetidine. Cimetidine induces mental changes in these groups of patients which may be manifested as restlessness, confusion, disorientation, agitation, hallucinations (visual and auditory), seizures, unresponsiveness, paranoia or depression. One of the most common neuropsychiatric changes associated with Cimetidine is a delirium-like syndrome which has been reported to respond to Physostigmine.[8] Other side effects that may be found with Cimetidine include diarrhea, myalgia, rash, transient elevations in serum transaminase levels and creatinine levels, candidal overgrowth in the stomach, gynecomastia, leukopenia, decreased sperm count, fever, bradycardia and interference with vitamin B_{12} absorption.

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Echoes from Our Past

Words, Words, Words!

JACK D. KEY*

The *Oxford English Dictionary* advises us that *Jobbernowl* denotes "A blockish or stupid head; a ludicrous term for the head, usually connoting stupidity." First used in the 1500s its definition grew to have associations with other words like blockhead, dunderpate, dunderhead, numskull, and Gurnets-head. From Samuel Johnson's *Dictionary of the English Language* we learn that *Oats* is "A grain, which in England is generally given to horses but in Scotland supports the people." Again, from the *OED* we find that onomatopoetic words are those formed for association with the sound of the thing signified i.e., buzzing, twittering, hissing, hum-drum, ding-dong, bow-wow, etc. The lot of the dictionary-maker, it was once said, is to be exposed to censure without hope of praise — literary pariahs forever punished by neglect.

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*Librarian, Mayo Clinic, Rochester, Minnesota.

Letters to the Editor

Micro-Electro Medical Stimulations

Dear Editors:

I must object to your publication of the article "Treatment of Decubitus Ulcers" by Barron, Jacobson, and Tidd in the February, 1985, issue.* A "New Approach" treatment with Micro-Electro Medical Stimulation (MEMS) is described, and it is concluded that the method is "safe, effective, and cost-efficient treatment for chronic decubitus ulcers." Data is termed "highly significant." I fear that the article as published provides a great dis-service to the care of patients with chronic wounds for the following reasons.

First, the preferred terminology for wounds overlying bony prominences and caused by excess pressure is "pressure sore," since, as the authors note, "decubitus" refers to "lying down" only. I must seriously question if the six wounds presented in this article are representative of the pressure sores affecting the geriatric patients confined to long-term Health Care facilities. True chronic pressure sores generally result in deep destruction involving skin, subcutaneous tissue, fascia, muscle, and even the underlying bony prominence. Commonly, a pseudobursa lined with granulation tissue and scar epithelium forms in a cone-shaped structure extending downward from a small skin opening through the entire thickness of the tissue. None of the wounds in the paper correspond to this classic description.

Second, the methods of treatment of these wounds prior to the time of study are not described at all, although the authors imply that they were adequate but ineffective to heal the wounds. My concern is that these pre-study treatments themselves were not optimal. Perhaps inadvertantly, during the time of this study with the increased attention required for treatment with MEMS, more appropriate attention was given to local wound care. This factor was not controlled. Without controlled study, it is premature to attribute improvement to the device alone.

Third, the only objective measurement attempted, the surface area measurement of the ulcer, is insufficient to make comparison possible between ulcers before/after treatment of any kind. Variations of depth, undermining, and position not to mention the patient variables of age, medical condition, nutritional status, etc. would all have to be compared and standardized.

Fourth, despite brief description of possible theories of action by MEMS there is no evidence provided that MEMS in fact caused healing in these cases. The authors even admit that "the total electro-physical effects of Micro-Electro Medical Stimulation on human cells are unknown."

Therefore, I must be critical of your decision to publish this article as written. At best, it represents a preliminary, anecdotal study only, and, at worst, it may be promoting medical quackery. Until well designed scientific research indicates safety, effectiveness, and cost-efficiency of MEMS I would recommend efforts be best directed toward appropriate local wound care, nursing care, nutritional support, general medical care, and timely surgical intervention as required. Devices cannot substitute for these.

Kipton J.V. Lundquist, M.D.
Reconstructive & Plastic Surgery, LTD.
Minneapolis, Minnesota

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*Page 103.

Dear Editors:

My colleagues and I have reviewed the letter and comments of Dr. Kipton J.V. Lundquist concerning our article on 'The Treatment of Decubitus Ulcers, a New Approach', published in the February, 1985 issue of Minnesota Medicine. Since the completion of that clinical study, as published, John M. Wood Ph.D., Professor of Biochemistry, University of Minnesota and Chief Biochemist, Gray Freshwater Biological Institute; has joined our investigative team. Thus, this reply to Dr. Lundquist's comments represents a unified statement from myself, from my co-authors and from Dr. John M. Wood.

The selection of subjects for our clinical study followed a prospective protocol which defined the project sample. Among the qualifying characterisitics the decubiti in the geriatric patients were chronic in duration and had failed to respond to the standard procedures, precisely as recommended by Dr. Lundquist; namely, ''appropriate local wound care, nursing care, nutritional support and general medical care''. The adjunctive use of the MEMS treatments clearly demonstrated that, fortunately for these patients, plastic surgery was not necessary.

A second clinical study on a much larger project sample using the MEMS treatment for decubitus ulcers (euphemistically referred to as 'Pressure Sores') has been completed by myself, Wyman E. Jacobson, M.D. and John M. Wood, Ph.D. The results of this second study will be published in the near future in a national medical-scientific journal. The therapeutic efficacy and safety of the MEMS treatments were clearly confirmed by this second clinical project.

Although, cost-efficiency was also very apparent, the details on that aspect of the study were not included in the publications. Data on comparative costs for standard non-surgical treatments, as related by Dr. Lundquist; and the MEMS Treatments are being tabulated and will be tested by appropriate statistical analysis. The results on the comparative costs data will be reported later.

The electro-physical characterisitics of the MEMS device closely approximate the *internal micro-miniaturized protonic systems* of living tissue*. These energy transfer systems are essential for cell metabolism; including cell division, replacement of damaged cells, and wound healing.

There is now strong accumulative clinical and laboratory evidence in support of the mechanisms of action of a low potential external electric energy delivered to living animal or human cells of the skin. These positive and beneficial biologic effects include an accelerated generation and storage of adenosine triphosphate (ATP), an increase in the rate of conversion of amino acids to cell protein, improvement of the cell membrane transport system and increased production of collagen.

We know of no parameter other that surface area that clearly provides a high degree of objectivity for meaningful data collection as to changes in the size of a localized lesion of the skin, including the ulcers as clearly defined in our clinical project. The measurement of the surface area of a localized skin lesion is the standard acceptable method used by dermatologists and was recommended by the statistician for our prospective protocol in order to obtain meaningful data for subsequent analysis.

As regard the indecorous accusation of 'promoting medical quackery', we elect to make no response; but, in silence we give no consent.

Jesse J. Barron, M.D.
Minneapolis, Minnesota

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*The *internal micro-miniaturized protonic systems* have been described in detail by Dr. Perry Mitchell, recipient of the Nobel Prize in Chemistry, 1978.

Health Care of Indochinese Refugees

Dear Editors:

In a recent article on ''Health Care of Indochinese Refugees'' (Minnesota Medicine 67:685-686, 1984), Dr. Patricia Walker stated, ''Major psychiatric disorders are not more common in Southeast Asian patients than in Americans but . . . many refugees experience transient psychiatric illnesses.''

Over the last five years we have followed 102 Hmong refugees in Minnesota, the total population of Hmong people aged 16 or over living in Minnesota in the Fall of 1977. We have found a five year incidence rate of 8 cases of treated psychosis (psychiatric depression, schizophreniform psychosis and paranoid psychosis). Over this same period the rate of major depression requiring psychiatric treatment (e.g., adjustment disorders, dysthymia, panic disorder), the course has been more chronic than ordinary.

This finding of greatly increased major and chronic psychiatric disorder is not peculiar to the Hmong or to Minnesota. It has been widely observed among refugees and most other migrants over the last fifty years (Williams and Westermeyer, 1984[1]).

Unfortunately, this perception of a low psychiatric prevalence rate among refugees is widespread among physicians. Since these syndromes often present with somatic symptoms, physicians are commonly consulted. Expensive somatic evaluations and repeated unsuccessful symptomatic treatment often ensue. Early diagnosis and appropriate treatment depend upon physician awareness of greatly increased psychiatric disorder in refugee populations.

Joseph Westermeyer, M.D.
Minneapolis, Minnesota

Reference

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University of Minnesota Medical Students

Dear Editors:

The University of Minnesota shares the current concern for maintaining an appropriate balance of students being educated in medicine at the University of Minnesota and the State's need for physicians. We are proud of our historic response to the needs of this State as attested to by our programs to increase the number of primary care physicians and, in addition, to correct an earlier maldistribution of physicians in rural areas. As a result the quality of health care in Minnesota ranks among the best in the nation.

The costs of undergraduate medical education at the University of Minnesota in Minneapolis are $18,407 per year; the student's burden for tuition alone is $7,000 per year. Those costs, coupled with a projected indebtedness of $40,182 per student at the time of graduation and a probable decline in earning potential, demand that we be responsive to these economic realities.

Accordingly, the University of Minnesota Medical School at Minneapolis decreased the number in its first-year class in 1984 from 239 to 220 students. The class size will be decreased to 200 students by 1986. We will be carefully examining the need for further reductions in the number of entering medical students. Among our considerations must be changing methods for health care delivery and projected changes in demand for health care by the population. Foremost in our considerations at all times must remain the assurance that we will maintain excellence in education.

David M. Brown, M.D.
Dean and Professor, Laboratory Medicine
and Pathology and Pediatrics
University of Minnesota

Interspecialty Council Highlights

Current Activities of the Interspecialty Council

March, 1985

Ambulatory Procedures

Because of the renewed interest in establishing specialty society ambulatory procedures lists, the Interspecialty Council reviewed and reaffirmed the MMA policy position on ambulatory procedures. The policy is as follows:

The MMA endorses the concept of outpatient surgery as a potentially effective means of containing health care costs and encourages physicians to select this option whenever possible without jeopardizing quality of care. The following points serve to amplify physicians' concerns and expectations regarding ambulatory procedures:

1. The competitive marketplace has been, and will continue to be, the biggest force for increasing the scope of ambulatory care practice in this country.
2. A hard and fixed list of ambulatory procedures is inconsistent with a physician's need to judge a patient's condition before determining where a procedure can be safely performed.
3. Utilization review and quality assurance mechanisms are necessary to assure quality of care in ambulatory settings at a reasonable cost.
4. Evolutionary changes in practice such as outpatient surgery may be temporarily impeded by the unavailability of appropriate facilities.
5. Reimbursement incentives should be used to encourage physicians and patients to select outpatient surgery. This will greatly reduce overall health costs and to a degree recognizes the increased efforts and costs of physicians in providing health care in an ambulatory setting.
6. The Interspecialty Council should encourage individual specialty societies to begin ongoing internal dialogue and education concerning guidelines for ambulatory care within their respective specialties.
7. MMA will act as a resource to third party payors in the development of their ambulatory procedure lists.

Report from the Ad Hoc Committee on Boxing

After due consideration the Ad Hoc Committee on Boxing presented the following resolution to the Interspecialty Council, where it received unanimous approval.

WHEREAS, the Minnesota Medical Association recognizes the long and short term risks of the sport of boxing, resulting in chronic neurological disorders in a significant percentage of its participants; and

WHEREAS, the physicians of the Minnesota Medical Association are sympathetic with the American Medical Association policy to ban boxing from amateur, scholastic, intercollegiate, professional and government athletic program, as detrimental to the health of the participants; and

WHEREAS, the health and fitness aspects of a boxing training program are recognized to improve cardiovascular fitness and endurance, muscular strength, and flexibility, as well as, to enhance balance, speed, coordination; and

WHEREAS, it appears likely that an effort to ban the sport of boxing through state and federal legislative efforts may be a long and arduous process; therefore be it

RESOLVED, that the Minnesota Medical Association institute an on-going educational effort for the public, which includes the athletes, physicians, parents, and members of the Minnesota Boxing Commission, to alert those groups involved in boxing to the potential lifelong hazards of the sports; and be it further

RESOLVED, that the Boxing Commission of the State of Minnesota be strongly encouraged to adopt specific safety regulations for boxing in order to decrease the hazards of the sport.

It is the intention of the Interspecialty Council to present this resolution to the MMA House of Delegates for consideration with the approval of the Board of Trustees.

A presentation will be made by Dr. Burton Onofrio to the Board of Trustees for their consideration and approval.

Price of Life Report

The Interspecialty Council discussed at length the Coalition Report published in Minnesota Medicine, as well as the Critique by Dr. Bell and response by David Graven.

The Council's major criticism of the report was the inadequate physician input . . . more physicians should have been involved. However, if was felt that the report has value because it raises important ethical issues which must be dealt with in the public arena on a long-term basis with maximum physician involvement.

The following motion was made and approved by the Council:

To refer to the Board of Trustees a request for the MMA to develop a formal response to the report, stating that organized medicine needs to be involved in the ethics process on an ongoing basis.

Linda K. Lacher*

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*Director, Specialty Society Services and Assistant Director of Policy and Liaison, Minnesota Medical Association, Minneapolis.

If you have any questions concerning the above, please contact your Interspecialty Council representative.

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Book Report

Vladimir Golyakhovsky, *Russian Doctor,* New York: St. Martin's/Marek, 1984. $17.95

All those who are troubled by the problems of American medicine might have their spirits lifted by reading Vladimir Golyakhovsky's unusual memoir. One of the leading orthopedic surgeons in the Soviet Union prior to his immigration to the United States several years ago, Dr. Golyakhovsky experienced a kind of terror that is part of every day life there even though he never was an active dissident nor sentenced to the Gulag Archipelago. He held the chair of traumatology, orthopedics and military surgery at the Moscow Medical School and was the only non-Party member of the Scientific Council of Surgery at the prestigious First Moscow Medical School. He had published over 100 scientific papers and held a dozen international patents on wrist and elbow prostheses. He counted among his patients individuals as prominent as Nikita Khrushchev, Boris Pasternak, Lev Landau, and Dimitri Shostakovich.

But why would a physician at the pinacle of success, one of the pampered elite, choose to renounce his homeland? This is the question Golyakhovsky attempts to answer as he unfolds the story of his youth, education, family, and professional development. Because he was a Jew, albeit a non-observant one, and because he steadfastly refused to join the Communist Party, he always had the heart of a stranger in his homeland.

Golyakhovsky is convinced that the Soviet Union is decades behind the West in all medical fields except military medicine due to political intrigue and a fetish for ideological orthodoxy. One fourth of medical education consists of subjects such as Marxist dialectic, Life of Lenin, and the History of the Communist Party. He received an appointment as a young surgeon in the northern city of Petrozavodsk because a local official esteemed his father. He experienced frontier conditions there: a lack of drugs, x-ray film, syringes, and bandages. In later trips to Yugoslavia, East Germany, and Czechoslovakia, he stood in awe of the superb instruments imported from the West.

Corruption and deception were omnipresent. Golyakhovsky was compelled to sign an autospy report that covered up the fact that two soldiers had frozen to death because they were drunk and ignored by their superiors. The news of a smallpox epidemic in Moscow in 1959 was suppressed because party officals were negligent. After he commented favorably on the secret operation by the American surgeon, Dr. DeBakey, to a high party official he was reprimanded. Pervasive paranoia and the sense of technological inferiority and backwardness allowed only corridor whispers about Western medical progress. Low salaries forced many physicians to moonlight, accept illegal fees, and secure everything from theatre tickets to meat from patients with access to these commodities.

The chasm between the rulers and the ruled is immense. After being invited as a consultant to examine Khrushchev's arthritic legs, he dined with the Presidium elite, including Leonid Brezhnev. The meal was a sumptuous orgy of limitless quantities of food and liquor Golyakhovsky never knew existed. The opulence he experienced at a Black Sea spa reserved for the elite so nauseated him that he left before his vacation allotment was up. Golyakhovsky estimates that half the adult male and one/fifth the adult female population is alcoholic — 50 million people — due to low wages (the average is 150 rubles, about $225 a month), incessant propaganda via all forms of the media, inadequate and shoddy goods, surveillance, and restrictions on freedom. People "drink from sorrow" because of moral anomie and severe constraints on their personal lives.

Golyakhovsky's agonizing dilemma was how to retain a semblance of ethical integrity in face of the corrupting demands for medical advancement. When a Jewish colleague decided to immigrate to Israel, a special meeting was called of his department where everyone publicly denigrated the man. Golyakhovsky could not summon the courage to resist. To this day he is burdened by shame for having participated in this Soviet ritual of scapegoating the individualist as a deviant. It was, however, the final incident that convinced him he had to leave. The historic and psychological events leading to his escape to freedom are compelling in their drama.

Dr. Golyakhovsky is also a published poet; thus his autobiography is passionate, committed, and romantic. It is fitting that his work was published in 1984 for he discovered existentially the meaning of George Orwell's *Animal Farm.* Every American physician would do well to understand the nature of medicine under a totalitarian regime and to empathize with one who had the courage to give up status and begin again. Dr. Golyakhovsky is presently in an orthopedic residency in Brooklyn Jewish hospital and lives with his family in Manhattan.

Walter W. Benjamin, Ph.D., Chairman,
Department of Religion, Hamline University,
St. Paul, Minnesota

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St. Paul Ramsey—Medical Center

Management of Common Psychiatric Problems in Primary Care

June 21-23, 1985 — Breezy Point Resort, Brainerd, Minnesota

Content will focus on newer approaches in the diagnosis and management of psychiatric problems commonly encountered by primary care physicians. Educational format will include lectures, informal discussions, video tape sessions, and "hands on" participation in an interactive computer-assisted program.

A variety of recreational and sporting activities including golf, tennis, swimming, boating, fishing and horseback riding will be available during leisure time, with many points of interest nearby.

Sponsors: Department of Psychiatry and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: 10½ AMA Category I hours, 10½ AAFP prescribed hours

Registration Fee: $190 for those staying at Breezy Point; $230 for commuters

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

Second Annual St. Paul-Ramsey Trauma Conference (fishing and family recreation)

August 1-4, 1985 — Fox Hills Resort, Mishicot, Wisconsin (Lake Michigan)

This program will combine a high quality educational program with summertime leisure activities on Lake Michigan. The educational component is designed to update physicians on current procedures for initial assessment and appropriate management of adult and pediatric trauma injuries. Time will be set aside for informal learning through discussion and videotape sessions.

In addition to recreational and sporting activities at the resort, charter fishing will be available on Lake Michigan.

Sponsors: Burn Center and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: AMA Category I, AAFP prescribed hours

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings*, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

AY, 1985

10 **MMA Annual Meeting;** Radisson St. Paul; CONTACT: Eugenia assar, Director, CME & Meeting Services, MMA, 2221 University S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

ids 1985 and beyond: Epidemiology, Virology, Diagnosis and agement; MN Dept. of Health; Hennepin County Community Health , Dept. of Med., Hennepin County Medical Center; and Dept. of , Univ. of MN Hospitals; Hennepin County Medical Center; CON- T: Jack Korlath, Acute Disease Epidemiology Sec., MDH; 623-5414

-14 **Basic Life Support (CPR) Course,** Certification/ rtification; Methodist Hospital; St. Louis Park; CONTACT: Lisa ns, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, Mpls., 55426; 932-5189.

Update on Arrhythmias; Office of CME, University of MN; Min- olis Plaza Hotel; CONTACT: Bart W. Galle, Ph.D., Interim Director, 293 Mayo Mem. Bldg., 420 Delaware Street SE, Mpls., MN 55455; 3012.

-17 **CNS Trauma & Disease for Primary Care Physicians;** rtment of Neurosurgery & CME, St. Paul-Ramsey Medical Center; sson Plaza Hotel, St. Paul; CONTACT: Bonnie Young, CME, St. -Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 221-3977.

-21 **Great Plains Organization for Perinatal Health Care, 15th ual Meeting;** Radisson South Hotel, Mpls.; CONTACT: Mary lung, Box 5039, Sioux Falls, SD 55117-5039. 605/333-7191.

-20. **Heart Attack Prevention Workshop;** University of MN, ce of CME; Wilder Forest, Stillwater, MN; CONTACT: Office of E, University of MN, Box 293 Mayo, 420 Delaware St. SE, Mpls., 612/373-8012.

Gynecologic Oncology; University of MN, Office of CME; Rad- n University, Mpls; CONTACT: Office of CME, Univ. of MN, Box Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

Health Effects of Lead in the Environment; Freshwater Society/ ndation and the MN Public Health Association, Education Committee; e Brown Center, Univ. of MN, St. Paul; CONTACT: Christine Ol- us, Program Dir., 2500 Shadywood Road, Box 90, Navarre, MN 92; 612/471-8407.

-24 **Current Concepts in Radiation Therapy;** University of , Office of CME; Mayo Memorial Bldg., Minneapolis; CONTACT: versity of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, s., MN 55455 612/373-8012.

JUNE, 1985

1-2 **Surgery for Primary Care;** Office of CME, University of MN; Cragun's, Brainerd; CONTACT: Bart W. Galle, Ph.D., Interim Director, Box 293 Mayo Memorial Bldg., 420 Delaware St., SE, Mpls., MN 55455; 373-8012.

4 **Immunology Seminar — Evaluation of the Child with Recurrent Infections;** Minneapolis Children's Medical Center; Minneapolis; CONTACT: Medical Ed. Dept., Minneapolis Children's Medical Center, 2525 Chicago Avenue South, Mpls., MN 55404; 874-6206.

5-7 **Topics and Advances in Pediatrics;** University of MN, CME; Radisson University Hotel, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN, 55455; 373-8012.

5, 12, 13 **Basic Life Support (CPR) Course;** Methodist Hospital; St. Louis Park; CONTACT: Mary Ann Kempcke, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, Minneapolis, MN 55426; 932-5162.

5-7 **Topics and Advances in Pediatrics,** University of Minnesota, CME; Radisson University Hotel, Minneapolis; CONTACT: Office of CME, University of MN, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

7-8 **Clinical Hypnosis;** University of MN, CME; Earle Brown Center, Univ. of MN, St. Paul; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012

7-8 **Minnesota Obstetrical & Gynecological Society Scientific Program;** MN OBGYN; Kahler Hotel, Rochester; CONTACT: T.M. Julian, M.D., Program Dir., Box 395, Mayo Memorial Bldg., Minneapolis, MN 55455; 612/373-4043.

7-8 **Advances in Stroke Management;** Abbott Northwestern Hospital; Plaza Hotel, Minneapolis; CONTACT: Sally Ventres, Abbott Northwestern Hospital, 800 East 28th St., Minneapolis, MN 55407; 612/874-4300.

7-9 **Surgery for Primary Care;** University of MN, CME; Cragun's, Brainerd, MN; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455; 612/373-8012.

8-9 **Annual Meeting of the MN Thoracic Society;** MN Thoracic Society; Madden's Inn on Gull Lake, Brainerd; CONTACT: James R. Jett, M.D., Mayo Clinic, Rochester, MN 55905; 507/284-2921.

(June continued)

14 **Performance Psychology: At the Peak of Excellence;** University of MN-Duluth, School of Medicine; Radisson Hotel Duluth; CONTACT: Jan DeRoche, Symposium Coor., University of MN-Duluth, School of Medicine, 10 University Dr., Duluth, MN 55812; 218/726-7916.

14-15 **Hospital Nutrition Support;** University of Minnesota, CME; Radisson University Hotel, Minneapolis; CONTACT: University of Minnesota, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

20-22 **Behavioral Pediatrics;** University of Minnesota, CME; Earle Brown Center, University of MN, St. Paul; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012

21-23 **Management of Common Psychiatric Problems in Primary Care;** Dept. of Psychiatry & CME, St. Paul-Ramsey Medical Center, St. Paul; Breezy Point Resort, Brainerd; CONTACT: Bonnie Young, CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 612/221-3977.

24-26 **Breast and Endocrine Surgery;** University of MN Medical School, Department of Surgery; Willey Hall, University of Minnesota, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

24-28 **Advanced Cardiac Life Support (ACLS);** Methodist Hospital; St. Louis Park, MN; CONTACT: Joan Peterson, RN, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5419.

25-26 **Advanced Cardiac Life Support Course;** North Memorial CME; Robbinsdale; CONTACT: G. Patrick Lilja, M.D., North Memorial Medical Center; 3300 Oakdale North, Robbinsdale, MN 55422; 520-5535.

27 **Neonatal Resuscitation Course;** North Memorial Medical Center, CME; Robbinsdale, MN; CONTACT: Peter Marshall, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 520-5200.

July, 1985

10-13 **Orthopaedic Surgery: Spine;** Univ. of MN, CME; Hyatt Regency Hotel, Minneapolis; CONTACT: University of Minnesota, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

17-18 **Human Aging;** University of MN, CME; Willey Hall, Univ. of MN, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St., SE, Minneapolis, MN 55455; 612/373-8012.

August, 1985

1-4 **Second Annual St. Paul-Ramsey Trauma Conference;** St. P Ramsey Medical Center; CONTACT: Ruth K. McIntyre, 640 Jackson St. Paul, MN 55101; 612/221-3980.

21-23 **Brain Tumors in Children;** University of MN, CME; F isson University Hotel, Minneapolis; CONTACT: University of MN: fice of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, 55455; 612/373-8012.

26-27 **Basic Life Support (CPR) Course Certificati Recertification;** Methodist Hospital; St. Louis Park, MN; CONTA Lisa Collins, Methodist Hospital, 6500 Excelsior Blvd., St. Louis P Minneapolis 55426; 612/932-5189.

27-29 **Advanced Cardiac Life Support Course;** North Mem Medical Center, CME; Robbinsdale, MN; CONTACT: G. Patrick L M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535.

An Expert System Approach to Fluid, Electrolyte, and Acid-B Balance; Cyberlog, The Quarterly Applied Medical Software (A 1985); Cardinal Health Systems, Inc; CONTACT: Suzanne Yotti, Dire of Marketing, Cardinal Health Systems, Inc., 7562 Market Place Dr Eden Prairie, MN 55344-3636; 612/941-5170.

September, 1985

9-20 **Third Annual Grad. Occupational Health & Safety Institu** School of Public Health & Office of CME; Continuing Education Extension, University of Minnesota; and Midwest Center for Occupatio Health and Safety; Earle Brown Center, University of MN, St. Pa CONTACT: Ruth K. McIntyre, Director, Continuing Education, Oc pational Health, St. Paul-Ramsey Medical Center, St. Paul, M 612/221-3992.

12-21 **Advanced Cardiac Life Support (ACLS) Certificati Recertification;** Methodist Hospital; St. Louis Park, MN; CONTAC Joan Peterson, RN, Methodist Hospital, 6500 Excelsior Blvd., St. Lo Park, MN 55426; 612/932-5419.

14 **A Workshop in Practical Cardiology;** Mayo Clinic/Mayo Fo dation; Marriot's Lincolnshire Resort, Lincolnshire, IL; CONTACT: W liam L. Neitz, Mayo Clinic, 200 First St. SW, Rochester, MN 559 507/284-2085.

19-21 **Challenge of the Lumbar Spine;** Abbott Northwestern H pital; Amfac Hotel, Minneapolis; CONTACT: Charles Burton, M. 2727 Chicago Avenue, Minneapolis, MN 55407; 612/874-4470.

27 **Northwestern Pediatric Society Annual Meeting;** Northwest Pediatric Society; Thunderbird Motel, Bloomington; CONTACT: Jan G. Cardle, M.D., 7250 France Ave. So., Edina, MN 554 612/831-4454.

27-29 **Minnesota Society of Neurological Sciences Annual Me ing;** Minnesota Society of Neurological Sciences; St. Paul Hotel; CO TACT: David G. Piepgras, M.D., Mayo Clinic, Dept. of Neurosurge Rochester, MN 55905; 507/284-3331.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

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Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400,Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

RECRUITMENT FOR FACULTY POSITIONS —Clinical faculty, rank negotiable, University of Minnesota School of Dentistry. Applications are invited for part-time consultative diagnostic and treatment planning services in specialty clinics. M.D. degree required. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Please send a brief resume and area(s) of clinical specialties (or request an application form). Bonita Bartholomew, University of Minnesota School of Dentistry, 15-116a Moos Tower, 515 Delaware St. SE, Mpls., MN 55455.

WANTED: One or two internists to join solo internist. Write: Internist, Box 1161, St. Cloud, MN 56302.

OPHTHALMOLOGIST, NEUROLOGIST — Otolaryngologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

FAMILY PHYSICIAN needed for a 5-physician group in a growing suburb in the metropolitan area, offering amenities of both cosmopolitan and rural life-style. Very competitive compensation and benefits. Contact Jeff R. Michell, M.D. or Gloria Vierling, Business Manager at 612-445-6440 in SHAKOPEE, MINNESOTA 55379.

WANTED: Family practitioner to join a 5 physician partnership in Litchfield, MN (a pleasant town of 6000 located 70 miles west of Minneapolis). If interested, please write or call collect at (612) 693-2804, Daniel A. Johnson, M.D., 35 E. 4th St., Litchfield, MN 55355.

FAMILY PRACTITIONER for Mankato Clinic satellite office. Excellent group practice opportunity in all-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R. F. Roskens, Administrator or B. C. McGregor, M.D. (507) 625-1811.

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Opportunities available: Board Certified or Board Eligible Ophthalmologist, Board Certified or Board Eligible Internist with subspecialty training, Board Certified or Board Eligible Family Practitioners to expand our Family Practice Department and offer opportunity of Branch Office practice. Contact C.C Lowery, Clinic Administrator at (218) 751-1280, home (218) 751-9718 or Jerry Thompson, M.D. (218) 751-1280, home (218) 751-9437.

PEDIATRICS AND FAMILY PRACTICE positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTITIONER needed to join 2 FP's at the Ellsworth, Wisconsin office of a progressive eleven physician group. Liberal fringes and financial package. Forty miles from metropolitan Minneapolis/St. Paul. Contact R. M. Hammer, M.D., River Falls, WI 54022. Phone (715) 425-6701 or (612) 436-8809.

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Kassar mailing service — affixing labels, collating, inserting, bulk sorting — "Turnabout within 72 hours." Free pickup and delivery within Metropolitan area. For more information call: 7:00 a.m.-6.00 p.m. (612) 924-3344. After hours (612) 489-0607.

Physician opportunities available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

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Group health inc. of Minneapolis/St. Paul seeks associates in ALLERGY, FAMILY PRACTICE, INTERNAL MEDICINE, ENDOCRINOLOGY, OBSTETRICS and GYNECOLOGY, CHILD PSYCHIATRY, GENERAL SURGERY and URGENT CARE. Must be board certified or eligible. Excellent facilities, comprehensive benefits, highly competitive earnings. Send curriculum vitae to: Paul J. Brat, M.D., Medical Director, 2829 University Avenue South East, Minneapolis, Minnesota 55114. An equal opportunity employer.

Florida, tampa bay/St. Peterburg: U.S medical school and residency trained desirable. Minimum two year emergency department experience. Salary $90,000/year (48-hour week) and up. Bonus based on productivity. Administrative skills desirable. No 11 p.m.-7 a.m. night shifts. Four clinics operating and expanding. A full- or part-time physician to join MD-owned and MD-managed ambulatory care center organization. Call 813-875-2091, Kenneth Kreye, M.D.

One or two family physicians needed immediately in rural Minnesota community on I-94 Competitive salary guarantee. Send resume to Minnesota Medicine, (754) 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414.

East range clinics, Ltd. seeks physicians in the following specialties: obstetrics/gynecology, orthopaedic surgery, and ophthalmology. Opportunity to enter established practice with progressive multi-specialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

Farmington, mn, four-man Family Practice group seeks to replace leaving partner. Board eligible — board certified desired. River's Edge Medical Clinic offers proximity to metropolitan area, 55 bed JCAH with 65 bed nursing home, resident ER hospital coverage nights and weekend, modern clinic with established practice. Contact Murray H. Hunter, M.D., River's Edge Medical Clinic, 310 Division Street, Farmington, MN 55024. (612) 463-7181.

Family practice — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Pediatrician — Growing pediatric practice with 5 pediatricians and 3 PNPs seeks BC/BE pediatrician to join stimulating private practice with good in/out patient mix and University ties. Reply to Dale T. Dobrin, M.D., 17705 Hutchins Drive, Minnetonka, Minnesota 55345.

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Office space for rent: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

Classified Advertisements

Family physician wanted to join solo practitioner in south Minneapolis. Call shared with two others. Human side of medicine a priority. Contact Judith Wanschura, M.D. 827-4751.

Family physician wanted for rapidly growing, progressive family practice group in St. Paul. Contact Tim Rumsey, M.D., 545 W. 7th Street, St. Paul, Minn. 55102 (612) 293-9199.

Occupational medicine — Position available with Mankato Clinic, Ltd. Full range of pre-employment, occupational medicine and emergency duties, along with general practice as desired. All-American community; full range of benefits and liberal time off; salary first year, incentive pay after. For more information, call collect: R.F. Roskens, Adm. or B.C. McGregor, M.D., 507-625-1811.

Family practice — A progressive community located in scenic northern Wisconsin offers a variety of recreational and practice opportunities. A family practitioner is definitely needed, and we offer financial backing and guarantees. Our area provides an excellent education system for your family. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Family practitioner – Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

Family practice oriented multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

Ob-gyn wanted by 14-member clinic. We are located in a community of 18,000 with a drawing area of approximately 45,000, 50 miles south of Minneapolis-St. Paul. Guaranteed salary the first year plus full fringe benefit package. Contact: Ray W. Wood, M.D. or Darral Mischke, Admstr., Faribault Clinic, 924 NE First Street, Faribault, MN 55021, Telephone: (507) 334-3921.

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Pediatrics, orthopedics, and family practice in the southwest: Thomas-Davis Medical Centers, a multi-specialty group practice network in Tempe, Tucson, and Green Valley, Arizona, need a Pediatrician, an Orthopedic Surgeon, and a Family Practitioner. First year guarantee plus incentive, early shareholder, and full fringes. Tennis and golf year-round. University medical school in Tucson. Doctor-owned HMO doing 25% prepaid. Call or write: F. William Rundle, M.D., at (602) 881-7100 — P.O. Box 12650, Tucson, AZ 85732.

Ob/gyn — Central Minnesota — Progressive, 9000 member staff-model HMO seeks a second OB/GYN for its family-practice based staff. Should be board certified or eligible and sensitive to women's issues. Excellent working environment with competitive compensation. College community located 70 miles from Minneapolis/St. Paul. Contact Deborah McCarl, M.D., 1245 15th Street North, St. Cloud, MN 56301, (612) 253-5220.

Family practice opportunities — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

(Continued on page 408)

Classified Advertisements

(Continued from page 407)

Time share week — Breezy Point Resort (Minnesota) Prime time. Lakefront condominium. Beautiful! Relaxing! Fishing, boating, tennis, golf. Much, much more. Priced for quick sale. Must sell! Call 1-612-255-0463 after 6 P.M.

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Internal Medicine Physician — B/C B/E, Starting salary $60,000, Description — B/C or B/E Internist with subspecialty in allergy cardiology or rheumatology to join three Internist. Location — Illinois.

ENT — Otolaryncology B/C or B/E, $60,000 — Negotiable, Multi-specialty Group of 18, Location — Washington.

OB/GYN — B/C or B/E, $80,000 + Single Specialty Group, Florida.

Urologist — B/C or B/E, $100K + , Solo, Location — Wisconsin.

We currently have many positions in nearly every state. For further information and details, please call Stevie Ward or send your C.V. to Roth Young, 4530 W. 77th St., Suite #250, Minneapolis, MN 55435 for immediate consideration.

Family physician: Immediate opening for a Family Physician to join a 23-physician multispecialty group in St. Cloud, Minnesota. This opportunity affords a Family Practice Physician a great financial and working opportunity. St. Cloud is one of the fastest growing communities in the State of Minnesota and is home to three major colleges. It is geographically located to provide quick access to the Metropolitan Twin Cities area. The St. Cloud Community has excellent school systems available to the individual physician and their family members. The St. Cloud area provides a quality recreational and cultural setting for the Physician to enjoy as the result of a fine call schedule associated with this opportunity. If interested in this excellent opportunity, please call collect either Dr. LaRue Dahlquist, President, and/or Daryl Mathews, Administrator, at (612) 251-8181 or send curriculum vitae to: St. Cloud Medical Group, 1301 West St. Germain Street, St. Cloud, Minnesota, 56301.

Wanted: northfield: Family physician BE/BC, F.P. residency graduate to join growing two man group in Northfield. OB and surgical skills desirable. Open hospital staff. Guaranteed salary plus productivity incentive. Full partnership in one year. Please contact Dr. David Halvorson or Dr. Donald Lum at (507) 645-4444, or write to 500 S. Water Street, Northfield, MN 55057.

Ob/gyn, and internal medicine Board Certified or Eligible, to join eight doctor clinic in Cloquet, Minnesota, a community of 12,000 (30,000 service area) located 20 minutes from Duluth — Superior. Clinic facility is located one block from modern, well equipped hospital. Cloquet enjoys a stable economy (forest products). Additionally, our community is noted for its excellent school system. First year salary guaranteed, paid malpractice, health and disability insurance, vacation and study time. Contact John Turonie, Administrator, Raiter Clinic, Ltd., 417 Skyline Boulevard, Cloquet, Mn. 55720. Telephone 218-879-1271.

Anesthesiologist needed — Opportunity at new ENT/Eye Ambulatory Surgery Center to open in Fall, 1985. Please direct inquires to James P. Brown, M.D., 240 Lowry Medical Building, St. Paul, MN 55102, (612) 227-6634.

Family practitioner. Marshfield Clinic Department of Family Medicine is seeking a BE/BC Family Practitioner for a new position. The physician joining the Clinic's expanding 5 member department will enjoy the support of one of the nation's largest multispecialty groups, share the philosophy of family oriented care with a preventive focus, and enjoy full hospital privileges but without the distraction of OB or surgical responsibilities. Marshfield Clinic offers an excellent salary plus extensive fringe benefits. Please sent curriculum vitae and the names of several references to: E. Grady Mills, M.D., Family Medicine Department Chairman; Marshfield Clinic, Marshfield, WI 54449 or call collect at (715) 387-5168.

Sublet fridley office: Unity Professional Building adjacent to Unity Hospital — 2 treatment rooms — 1-4 days/week. Contact Dr. Bruce Waterman; 612-784-2090.

Internist — BC/BE internist needed to join four internists in multispecialty group in NE Wisconsin. Competitive salary and benefits. Both subspecialty and general medicine inquiries welcome. Send C.V. to Neil Binkley, M.D., 1510 Main Street, Marinette, Wisconsin 54143 Phone: 715-735-7421.

WANTED: FAMILY PRACTITIONER, OB/GYN. Group practice. Central Minnesota. Starting salary $45,000. Write Minnesota Medicine (755), 2221 University Ave. S.E., #400, Minneapolis, MN 55414.

MOOSE LAKE STATE HOSPITAL — staff psychiatrist — two positions immediately available. We are a 500 bed hospital serving the mentally ill, mentally retarded, chemically dependent and psychogeriatric. JCAH accredited. These positions will involve admin., prog. development, training and clinic direction. An opportunity to live by a lake and year-around outdoor recreational community located 100 miles north of major urban area and 50 miles south of the education and medical community of Duluth on Lake Superior. Low cost housing. Salary: from $65,000 and up depending on quals. and experience, excel. fringe benefits including state retirement and deferred comp. plans. For further infor. contact F.R. Milczark, CEO, Moose Lake State Hospital, Moose Lake, MN 55767 (218) 485-4411.

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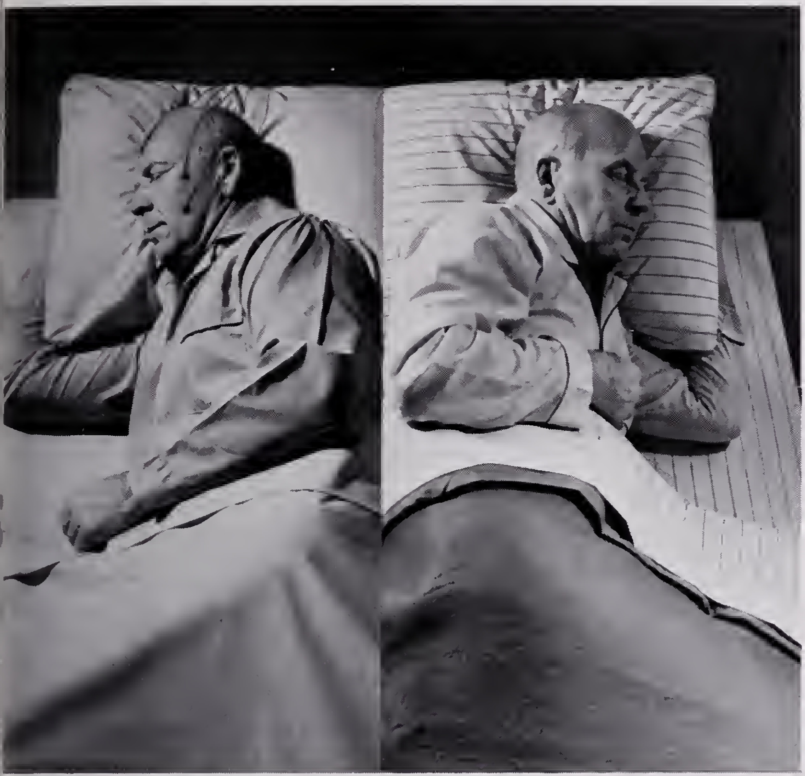

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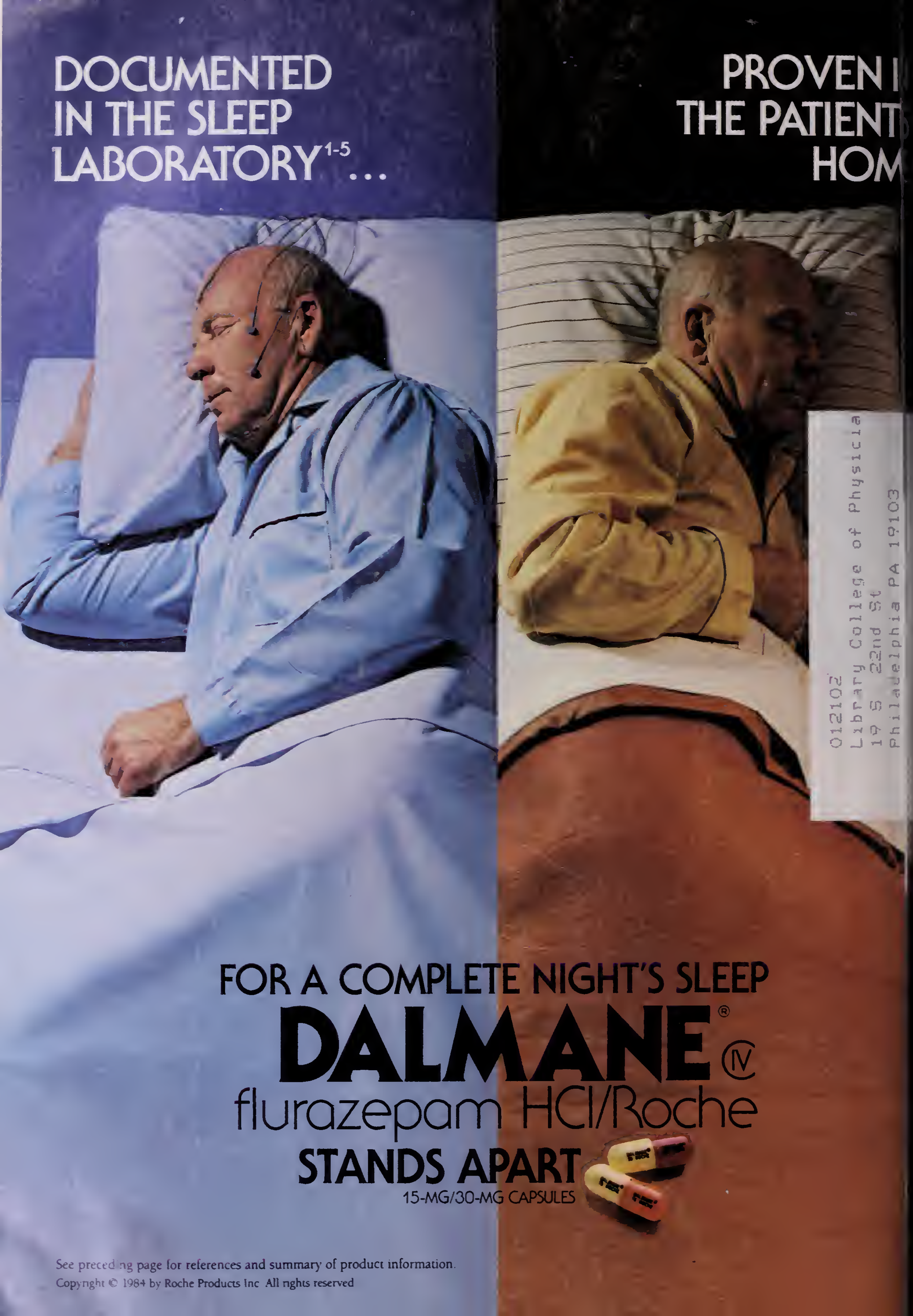

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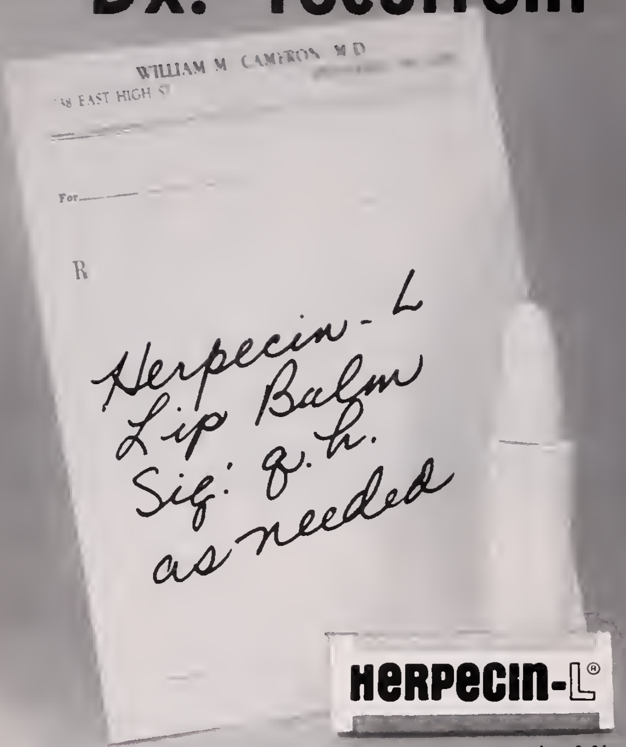

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President's Letter

It is with a certain amount of trepidation, and yet with enthusiastic expectation, that I approach the up-coming year as the president of Minnesota Medical Association. Without realizing, I have been studying and in training for this role for several years as a member in our organization in various capacities.

I have had good teachers in the presidents who have preceded me and in the trustees who have given so selflessly of their time and concern in your interests.

During these past years the practice of medicine has undergone greater changes than one could ever have conceived. The role of organized medicine has been a kaleidoscope of changing concerns as new methods of practice, external controls, payment mechanisms, and government regulations have developed. Your MMA continues to address these concerns, some comfortably and easily, some with great difficulty and much soul searching. There are differences of opinions among our members. Yet we serve as the organization of and in the interest of all physicians whatever their practice styles, payment mechanism, or location of practice.

In the coming year we will be faced with the problem of continuing and tightening government controls through DRG expansion possibly to include physicians' services, with pre-admissions screening, and new contractual arrangements. Problems will also arise from our rapidly expanding technological advances. Institutional ethics will require attention as the care of our aged becomes more complex and the mission and personality of hospitals and institutions change.

At the top of the MMA's priority activities in the next year will be the Professional Liability Initiative to be addressed by a multidisciplinary task force in an effort to find some answers to the rapidly increasing cost of liability protection.

In addition, i.e., our public relations efforts will be expanded through PEP (Public Education Program) which carries our messages to the public and to specific audiences such as senior citizens and community organizations. Data collection and release continue to be a concern to be addressed as we see outside businesses and agencies monitoring and evaluating our medical practice patterns.

MMA will continue to serve you in whatever capacity is needed. You need your professional organization to advocate for your interests.

But your organization also needs you. It makes no difference whether a physician practices solo, in a group, a prepaid system, or in an academic or research capacity, organized medicine is the most effective way to speak in our behalf as we serve our patients. Lagging membership in organized medicine is a fact and a worry. With the externally imposed changes in medicine, only by acting as a cohesive, single voice can we have a role in directing these changes. I encourage each of you to bring your non-member colleagues into the fold of a county society, MMA, and AMA.

I also need your help. I need your guidance, your support, and your counsel as we enter a new year. Our organization cannot function without the input of all members. Our staff is superbly efficient and dedicated to the MMA activities. You will find them helpful and knowledgeable in answering your questions or in helping to solve problems.

Medicine still remains the most gratifying profession a person can enter. I am committed as are all the trustees and officers of MMA to serving you and to representing you in the coming year. With your help and support this will be a good, productive year.

Peggy Craig

M. Elizabeth Craig, M.D.
President
Minnesota Medical Association

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Editor's Notebook

The Corporate Transformation of Medicine in Minnesota Galloping Capitalism and the Twin Cities' Medical Marketplace*

11th in a Series

> *"The inherent vice of capitalism is the unequal sharing of blessings; the inherent virtue of socialism is the equal sharing of miseries."*
>
> *Sir Winston Spencer Churchill, 1874-1965]*

Thank you for introducing me, Doctor Leonard.

Usually people introduce me differently. Rather than stressing my knowledge of other nation's health systems, they say I speak for medicine in Minnesota, a state poised on the cutting edge of the health care revolution. Thank you for sparing me those cutting introductory remarks.

New Experience

Never before have I spoken to a group of oral and maxillo-facial surgeons. I shall keep my foot out of my mouth, and my jawboning to a minimum. I must warn you. After you've heard what I have to say, you may be weeping and wailing and gnashing your teeth.

Delight with Introduction

I was delighted when I learned Doctor Myer Leonard, an Englishman by birth and an American by choice, was going to introduce me. He is a dear friend. Myer is on the international lecture circuit. It was Myer who taught me speaking has three purposes: (1) to inform, (2) to educate, and (3) to entertain — not necessarily in that order.

The English division of the International Society of Maxillo-facial Surgeons, I understand, has decided to create an award in Myer's honor — the Order of the Golden Jaw, or the Order of the Silver Tongue. They have not decided yet what kind of verbal alchemist he is.

The Title

Speaking of Myer and England brings me to my title — "Galloping Capitalism and the Minnesota Health Care System." Why don't I use the less flamboyant phrase "Creeping Capitalism?"

Well, in the first place, Paul Ellwood used a variant of that phrase in 1981 when he delivered a paper before the Sixth Annual Duke Private Sector Conference. His title was: "Competition: Medicine's Creeping Revolution."[1] Times have changed since then. Radical change is now occurring rapidly.

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*Address delivered before the Minnesota Society of Oral and Maxillo-facial Surgeons, April 13, 1985, Regency Hotel, Minneapolis, Minnesota.

Second, I believe health care capitalism, Twin Cities style, will soon trigger a galloping stampede of mergers and consolidations among hospitals, other health care organizations, and physicians. This may be described as vertical integration, consolidation, shakeouts, and radical restructuring, but this stampede will be happening because of fears of being left behind without a saddle you can call your own. Or, if you want to change the metaphor, we're playing a game of medical musical chairs, and nobody wants to be left outside an organization when the music stops.

England is, of course, the home of that creeping brand of socialism that American cowboy capitalists have said for years will be America's undoing. American doctors and dentists have often warned of an Orwellian socialistic doomsday. On that fateful day, the government will take over, and doctors and dentists will be slaves of the state. Since 1948, when socialized medicine came to England, we have been pointing our finger across the seas and yelling: "Don't let that happen to us." I have news for you: if the corporate transformation continues at its present galloping pace, some of you may be begging for the government to take over. tAn individual practitioner may have a better chance of fighting the government than influencing market forces.

The Twin Cities' Scene

In the March 24 edition of *The Minneapolis Star and Tribune*, Ellwood was quoted as saying the present 40 percent market penetration of HMOs would be 100 percent by 1990 or 1991. By then, in other words, all physicians will be working for, in one way or another, competing health care corporations. A health care corporation is an organization in which the insurance, marketing, administration, and delivery of inpatient and outpatient services are all handled under one corporate roof. Paul's term for giant health care corporations is "supermeds."

In 1975 only 83,000 Twin Cities residents belonged to HMOs. Today that figure is 770,000 — a nine-fold increase in ten years. What was a creeping revolution has become a galloping stampede. At least the stampede is occurring here in the Twin Cities. Nationally only seven percent of the people belong to HMOs. In 1983, the national HMO enrollment rate climbed to 15 percent — a doubling time of six years for HMO enrollments. Last year, to everyone's surprise, HMO enrollment jumped 22 percent across the nation. If the 1984 rate is sustained, HMO enrollments will double every 3½ years.

The "Invisible Hand"

And so, a funny thing has happened to those of us who practice traditional medicine. While physicians have been inveighing against the evils of "creeping socialism," we have been backhanded by the "invisible hand" of capitalism. Adam Smith, the English economist, coined the term "invisible hand" to describe the economic forces of self-interest and incentive that shape man's economic behavior. That economic hand is now slapping us down. In 1984, I heard on the streets, one-third of Minnesota physicians would lose one-third of their income. Significant numbers of physicians, and I assume dentists, are now in economic jeopardy.

Why? Well, there's the AMA fee freeze, increased cost of doing business, discounting and bidding for patients. And, there's the doctor glut — we'll have 40 percent more doctors in practice in 1990 than we had in 1980. Also, for those of you unaffiliated in any way with HMOs, the 40 percent HMO market penetration means for you that 40 percent of the population has left town. Finally, keep in mind that while 400 patients exist for every doctor in the Twin Cities, HMOs use only one doctor for each 1000 enrollees. There are simply too many doctors chasing too few patients, and the few that remain are disappearing behind closed fences into inaccessible enclaves of health care. If you are an independent dentist or doctor, you are being isolated from the market.

Forces of Capitalism

In fundamental ways, forces of capitalism — the use of capital, ability to deal with other organizations, and management skills that permit an organization to mobilize a team of professionals to bring a product to market — are more threatening to traditional practice patterns than forces of socialism.

1. For one thing, the forces of capitalism are usually invisible. Big government is visible. You can always rant against the bureaucrats in Washington. You can write your congressman or senator. You can send a lobbying team to Washington. But how do you compete against large health care organizations, or against the myriads of small or large businesses who use their services?

2. For another, the forces of capitalism pervade every nook and cranny in America. We are a capitalistic society. And, for this decade at least, we are a conservative capitalistic society. Medical and dental professionals are known to be conservative supporters of capitalism. How do you mobilize against your philosophical allies?

3. We live in a society of competing organizations. Business is done by organizations, using the ways of organizations. As autonomous individuals, we health professionals represent the last remnants of a cottage industry. This does not mean there will no longer be individual health professionals, merchants, or entrepreneurs. But it may mean we will have to depend upon umbrella organizations and to learn the ways of organizations.

4. We are losing control of our destinies because we lack management skills. Simply put, health care professionals do not do what paid professional managers do well — manage. Besides, society is entrusting health care to organizations run by non-health care professionals rather than health care professionals themselves. To put it directly, a profession is being transformed into a business.

HMO Skills

Consider the skills it takes to run an HMO: marketing, managing finances, setting rates, applying insurance principles, containing costs, and gatekeeping. Gatekeeping is controlling access to expensive services and judging whether those services are necessary. Our entire professional and postgraduate education teaches us to give patients access to those services, indeed, to encourage use of those services. Not to do so is to unlearn everything we have learned. Besides, the whole concept of marketing is alien to our collegial culture. It smacks of self-promotion, of blowing one's horn, of conscious patient manipulation, and, God forbid, of advertising. Marketed and managed health care simply does not come naturally to physicians.

How did We Get into this Pickle?

How did we get into this situation where the forces of capitalism are threatening to destroy our way of life, which rests on the concept of independent and autonomous professional healers making their own decisions? It was, after all, an enjoyable way of life.

Before I describe how we got from fear of socialism to fear of capitalism, perhaps I ought to trace my own background so you can judge my qualifications to judge this sequence of events. Where you stand depends on where you sit.

To begin with, I am a pathologist. You have heard, no doubt, these definitions of medical specialists. An internist is someone who knows everything but does nothing. A surgeon is someone who knows nothing and does everything. A psychiatrist is someone who knows nothing and does nothing. A pathologist is someone who knows everything, but it's too late.

For the last twenty years, I have worn three hats — a pathologist in an urban hospital, a partner in a commercial laboratory, and an editor of a state medical journal.

As a hospital pathologist, I have seen hospitals rise and fall. In twenty years hospitals have become temples of technological excellence, consuming 40 percent of this nation's health budget. And now hospitals' walls are tumbling down. In 1983, when DRGs were introduced, the United States had one million beds. By 1990, there will be 650,000 beds, and an estimated 1000 of this country's 7000 hospitals will no longer exist. In the Twin Cities in 1984, occupancy rates dropped to an average 47.5 percent, down from 61.5 percent the previous year. Occupancy is even worse in rural Minnesota. In Minnesota in 1984 patient days dropped 31 percent in hospitals with fewer than 25 beds; 23 percent for hospitals with 25 to 49 beds; and 18 percent for hospitals between 50 to 99 beds. A hospital used to be the first place to go when you were sick. Now it is the last. Hospitals used to be where the patients went; now hospitals must go where the patients are.

As a partner in a commercial laboratory, I have seen the medical industrial complex flower. I have witnessed firsthand the industrialization of the specialty of clinical pathology. And with the TEFRA Act of 1982 I have seen the government in one strike, do away with the specialty of clinical pathology. What the government giveth, it taketh away. When this nation enacted the Medicare and Medicaid laws in 1965, it, in effect, subsidized a sprawling industry which Relman calls the Medical Industrial Complex. With the government paying for fee-for-service care for the elderly, with business and individuals able to write off the cost of health care, we were able to industrialize, or if you prefer, to monetize the health care industry.

In the commercial laboratory setting, I have learned about management, business principles, and the importance of marketing. I have learned business has three, and only three purposes: (1) innovation, (2) marketing, and (3) creating and keeping customers. To grow, you must be nimble, and you must be inventive to retain your customers. Businesses depend, after all, on those outside the organization to survive. And I have learned that we, as health professionals, are often intellectually arrogant about other business professionals. We have assumed that only health professionals, using our knowledge, can attract patients. Marketing professionals are now teaching us otherwise.

As an editor of a state medical journal, I've had the opportunity to watch physicians in organized medicine in action — to see them suffer through the agonies of the corporate transformation of medicine. A good editor is, by definition, a contortionist — he has his nose in the air, his finger in the wind, his eye on the horizon, his nose to the grindstone, and his ear to the ground.

With my ear to the ground, I have heard the rumbling of discontent among doctors. I have seen them leave organized medicine; I have seen them retire and become employees; and I have seen them threaten to form splinter groups, kind of quasi-unions, to protest what is going on. Doctors are deeply unhappy by what is going on — three of four in the Twin Cities would not recommend medicine as a career to their offspring.

The Three Great Transformations

To know the present and future, you must know the past. In the last 80 years, American medicine has been through three great transformations.

The first was *scientific*, marked by the great advances in medical science -asepsis, the discovery of bacterial organisms, the advent of anesthesia, advances in radiology, and the use of intravenous fluids.

The second was *social*, marked by such great events as the Hill-Burton Act, employee health benefits programs with the exclusion of employer contributions from the taxable income of employees, the financing and the expansion of academic medical centers, and Medicare and Medicaid. As Americans, we made the decision to bring medical technology to as many of our people as possible.

The consequences of this second transformation were predictable and inevitable — they were an open-ended investment in health without limits and led to expansion of the system with rapid cost inflation. Medicare and Medicaid were based on the principles of fee-for-service payment of physicians, costreimbursement for hospitals, and free choice of doctors for patients.

During the 1970s, Medicare doubled every four years and grew at a rate that doubled its share of GNP in a decade. From 1960 to 1980 health spending went from $27 billion to nearly $250 billion — from 5.3 percent of the GNP to 9.5 percent. This year $400 billion or 11 percent of the GNP will be spent.

By 1980 the signs were there that the open-ended era was coming to a close. The tax revolt was in the air; we had neglected our national defenses; Proposition 13 passed; social security and inflation were straining the federal budget; Ronald Reagan and a Republican Senate came to power; and the federal budget ballooned. It was inevitable the government would move to cut health spending. With the Omnibus Budget Reconciliation Act of 1982, the TEFRA legislation in 1982, and the DRG law in 1983, it did — and with a vengeance.

With prospective pricing, offering of HMOs to Medicare patients, and the change of Medicaid to offer contracts to elective providers, the government initiated an economic revolution.

This third great transformation, the *corporate transformation*, is driven by costs. It is a sweeping structural change. It is permanent, fundamental, and historic. In the Twin Cities, health care corporations will soon have penetrated every major health care market — fee-for-service, Medicare, and Medicaid.

Different Views of the War

What is going on? We are in the final stages of a revolutionary war. It is a war that is converting a profession into a business. It is ending sooner here in Minnesota than the rest of the country. It has been a long war. It has lasted about fifteen years here and has five more years yet to go. It may stretch out for ten to fifteen more years elsewhere.

Depending on their vantage point, different people use different words to describe the revolutionary war.

A Doctor's View

Here is how Doctor Elizabeth Craig, the new president of the Minnesota Medical Association, sees it:

"We're having a lot of difficulties in medicine right now, a lot of agony. But any time you go from a cottage industry through the equivalent of an industrial revolution, people are going to be threatened. It's a trying time in medicine," (*Saint Paul Press and Dispatch*, March 17, 1985).

A Veteran Editor

Here is Robert Cunningham, Jr., a veteran editor who now serves as a consultant for the magazine *Hospitals*:

"What we have on our hands now is a revolution of the buyers of medical and hospital expenses — that is, of course, the two principal buyers of these services, government and industry, which between them pay for upward of 90 percent of all the doctor and hospital bills in the nation. And it is the revolution of the buyers, finally, that has done what revolutions always do — turn things upside down. For the first time in more than 100 years, medical care is moving out of the hospital. For the first time since housecalls disappeared a generation ago, instead of people going to where medicine is, medicine is going to where the people are'' (Cunningham, R.: New Directions in the Era of Competition, Twelth Annual Reverend John J. Flanagan, S.J. Lecture in Hospital Administration, St. Louis University, April 10, 1984).

A Seer from Sear's View

Here is Doctor Henry J. Simmons, M.D., Vice-President, Health Care Division, of Sears:

''The American health care system is well into the most significant revolution it has ever experienced. It is a revolution that is revising tradition, reorienting the power structure, and revealing new rules for old players . . . this present day revolution is turning our traditional world topsy-turvy — the world each of us knows so well, and the world we find most comfortable.''

He goes on to describe a pyramid called ''traditional medical establishment.'' At the top he places ''physicians,,'' and then ''hospitals,'' ''insurers,'' ''government.'' ''employers,'' and, finally, ''consumers.'' Simmons adds that this pyramid is in the process of being turned upside down. For the medical division of Sears, having the consumer on the top of the pyramid will be fine, for Sears knows how to market to consumers.

A Sociologist's View

Here is Paul Starr, author of the Pulitzer Prize winning book ''The Social Transformation of American Medicine'':

''American medicine today contains a paradox. Outwardly, its institutions, prosperous and authoritative, show imposing strength. Yet, their social and economic structure is fundamentally unstable, and long-standing assumptions that have governed their operations are in danger of breaking down. A fundamental, intellectual reassessment of medicine is taking place. A sense of impending change fills the air, and is driven by the massive increase in costs consuming ever larger amounts of the nation's national wealth.''[2]

My View of Smaller Wars

And finally, there is my view. In the Twin Cities, this larger war is a combination of many smaller wars.

It is a war between hospitals, who are fighting wars for dwindling numbers of patients. For the first time, more than half the Twin Cities hospital beds were empty in 1984.

It is a war between HMOs themselves and between the HMOs and the Blues. Group Health, SHARE, and MedCenters are waging an intense campaign for ''exclusivity,'' exclusive commitment of physicians to their particular plans. (PHP, HMO Minnesota, Blue Cross and Blue Shield, and the Minnesota Medical Association fought a losing battle in the current Minnesota legislative session to make exclusivity illegal, but were defeated.) As the ''exclusivity'' battle heats up, and Group Health, SHARE, and MedCenters try to mop up the remnants of patients and physicians by capturing and fencing off more territories, PHP and the Blues may counter by introducing their own capitation plans or by demanding that physicians sign long-term contracts forbidding exclusivity.

It is a war for the loyalties, assets, and souls of physicians. In their ads, Blue Cross AWARE Gold claims over 5,000 loyalists, PHP 2,600, MedCenters 500, and SHARE 300. Group Health isn't talking in print, but is dealing with a number of groups. I have heard it said that every group of over three in the Twin Cities is now negotiating at some level with either SHARE, Group Health, or MedCenters.

It is a war uniting traditional enemies — physicians and hospital administrators.

This is taking the form of MeSH organizations and of multiple joint ventures between physicians and hospitals. As Gordon Sprenger, CEO of Abbott-Northwestern Hospital and Lifespan, their holding company, commented in the April 4th *Minneapolis Star and Tribune*: "Everyone is talking to everyone . . . I have to believe every hospital in town is looking into the possibility of joint ventures with physicians" (Slovut, G.: "Empty Beds Prompt Area Hospitals to Seek Better Competitive Positions, *Minneapolis Star and Tribune*, April 4, 1985).

It is a war that is being fought most bitterly for a share of the seniors' market. People over 65 spend five times as much for medical care as the rest of the populace. Indeed, in Minnesota, 33 percent of Medicare funds are spent in the last year of life, and the over 65 crowd is the most explosively growing segment of our population. Twin Cities' HMOs now have 25 percent of that market, and they would like to have 50 percent of it in two years. Finally, for HMOs, the seniors' market has proven the most profitable. Small wonder, then, that a marketing war has erupted for the minds and pocketbooks of the elderly.

It is a marketing war being fought in the air, on the tube, in the streets, and from door to door. Of late, the advertising has become more pointed. Group Health, for example, has run a comparison ad with this headline: "Compared to Group Health, there's so much less to SHARE." And PHP, capitalizing the WCCO I-Team program questioning the profit motives of HMOs, has run a series of ads questioning the morality of capitation payments to physicians. MedCenters has run two full page Sunday ads (cost: over $15,000 each) featuring every organ and orifice in the human body and saying it has a specialist for each.

And finally it is a war that once was confined to city streets but is now spilling out into the countryside. HMOs now have 40 percent Twin Cities market share and would like to take a greater share of the rest of the state. In 1984, HMO enrollment went from 16,000 to 37,000 in the non-metropolitan areas, and unless Blue Cross and Blue Shield's AWARE Gold plan is effective, will certainly continue to grow.

Consequences of War

What is likely to be the consequences of this war? Well, according to Karl Bays, President of American Hospital Supply, which on April 1 announced its merger with Hospital Corporation of America, the result will be "the incorporation of health." By this, he means the consolidation of the United States health system into new, larger, corporate-type organizations. Many of these organizations will either center around inpatient care (i.e. hospital chains) or outpatient care (i.e. HMOs). More likely, my view is that both of these will evolve into health care corporations with insurance, marketing, and outpatient and inpatient delivery of care under one corporate umbrella. This vast structural change of consolidation and integration will extend to alternative delivery sites, to surgicenters, emergicenters, physician groups, shopping centers and into the home itself.

This revolutionary war will be fought at an ever-accelerating pace because of the underlying trends, which will hasten the structural changes. These trends are: (1) health care will increasingly be delivered in the context of a competitive corporate environment; (2) there will be strong continuing pressure from government and business to slash costs without sacrificing quality; and (3) the doctor glut will continue unabated.

The Doctor Glut and Quality

Because of the doctor glut, I'm fearful the quality of medicine will deteriorate. For one thing, primary doctors will stop referring, because by referring to specialists, they will lose fees. Two, as specialists see fewer patients, they will lose their edge and competence at handling specific diseases and procedures. Three, doctors will lose control of the system to those who are concerned more about the bottom line than ethics.

Other Aspects of Quality

As I read comments of government officials and businessmen about competitive health care, I see a myth emerging. This myth says: traditional medicine is so riddled with fat and inefficiencies that you can cut costs indefinitely without sacrificing quality. All you have to do is "manage" the system, i.e. give the gatekeepers incentives, punish abusers, provide fixed budgets, tighten utilization controls, and change the care setting to outside the hospitals. If I were 65, sick, and frail, I would question if quality might not suffer from a shortened hospital stay, a reduced nursing staff, a trip home immediately after surgery, or intravenous fluids or other medical support at home or a nursing home, rather than in a hospital. Even "managed" cost savings at some point lowers quality. As physicians we must guard against deteriorating quality and not be swept away by the economic arguments. My sense is that the pendulum is swinging too far towards the cost-cutting side.

Where does this leave you? Are you going to completely lose control? Will quality go to the dogs? Well, to paraphrase Mark Twain's comment about Wagner's music: "It really isn't as bad as it sounds." Today most Twin Cities' physicians have hybrid practices. They practice in their own offices, have 10 to 50 percent prepaid patients, and also conduct a traditional practice. Many find the marketing and management skills of prepaid organizations are helpful, although the gatekeeper role still makes for difficult decisions, and we have found we can do many things well outside the hospital without significantly sacrificing quality.

There are ways to regaining control, but they require planning and organization:

1. On an individual level, you may have to think through your place in the market. What is your basic business? What do you really want to be doing five years from now? What is your patient base? What are your strengths? Do you have anything unique to offer? Based on this information, should you change the name of your clinic, your letterhead, your location? Are your employees being courteous? Should you extend your office hours? Should you start an office newsletter? You may want to bring in a marketing consultant from the Minnesota Medical Association or elsewhere to help you think through the relative emphasis to be placed on the four Ps of marketing — product, place, price, and promotion. For most physicians, a quality product and a convenient place remain the most important with competitive pricing and promotional schemes ranking a distant third and fourth.

2. You may want to consider consolidating or integrating your office with other oral or maxillo-facial surgeons. When it comes to marketing and to efficiencies, there is strength in numbers. There are ways of forming umbrella organizational structures without abandoning your present site or without tearing down any walls. Again, the Minnesota Medical Association and perhaps the Minnesota Dental Association know those who can work out these organizational structures. The Twin Cities has an unusually great number of competent health care organizational consultants.

3. You may want to work out an affiliation with an HMO. If you are primary physicians, you may want to consider handling HMO patients for a certain geographic area. If you are a group, you may want to bid on referrals for a certain procedure from a certain HMO or PPO. There are tried and true ways of negotiating with HMOs and PPOs. Call the Minnesota Medical or Dental Associations, or call in a health care consultant to find out how such arrangements are structured. Before you sign a contract, read the small print or ask legal counsel what the implications of the contract are.

4. Investigate a joint venture with the hospital you are most familiar with. Hospital administrators are anxious to talk to you. It is wise, I think, to think through your

own fantasies in advance, to ask yourself what you really want to do, and to talk through your idea with those you trust, and finally, to go through with the process of drawing up a business plan.

As you ponder your choice, remember this: your best chance of surviving and thriving will probably be as part of a “network.” There is nothing new about being part of a “network.” If you treat PHP patients, belong to a PPO, practice in a hospital that is part of a chain, participate in AWARE Gold, or are affiliated with an HMO, you are already part of a “network.” What is new is that networks are merging, buying each other out, and otherwise consolidating, integrating, and formalizing their relationships.

Closing

I would like to close with a quote. Because of Myer's presence and his English background, because I have talked about the situation in the Twin Cities of Minneapolis and St. Paul, and because I have scared the dickens out of you, I have chosen the opening paragraph from Charles Dicken's “The Tale of Two Cities:”

“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was an epoch of belief, it was an epoch of incredulity, it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair.”

That pretty much captures the contradictions of these revolutionary times in medicine.

Richard L Reece MD

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COVER PHOTOGRAPH

“Flight of the Monarch”

One of the first signs of spring, the migration of the Monarch butterfly passing through Minnesota, was caught by Dr. Neil Jeddeloh and his wife while on a biking trip through the Singing Hills near Waterville, Minnesota.

Dr. Jeddeloh is a Minnesota University Medical School graduate who completed his residency in family practice at the North Memorial Center and practices at the North Clinics in Robbinsdale and Osseo. He is an enthusiastic photographer and sportsman.

A Pentax ME camera with a 15mm 1.7 lens was used.

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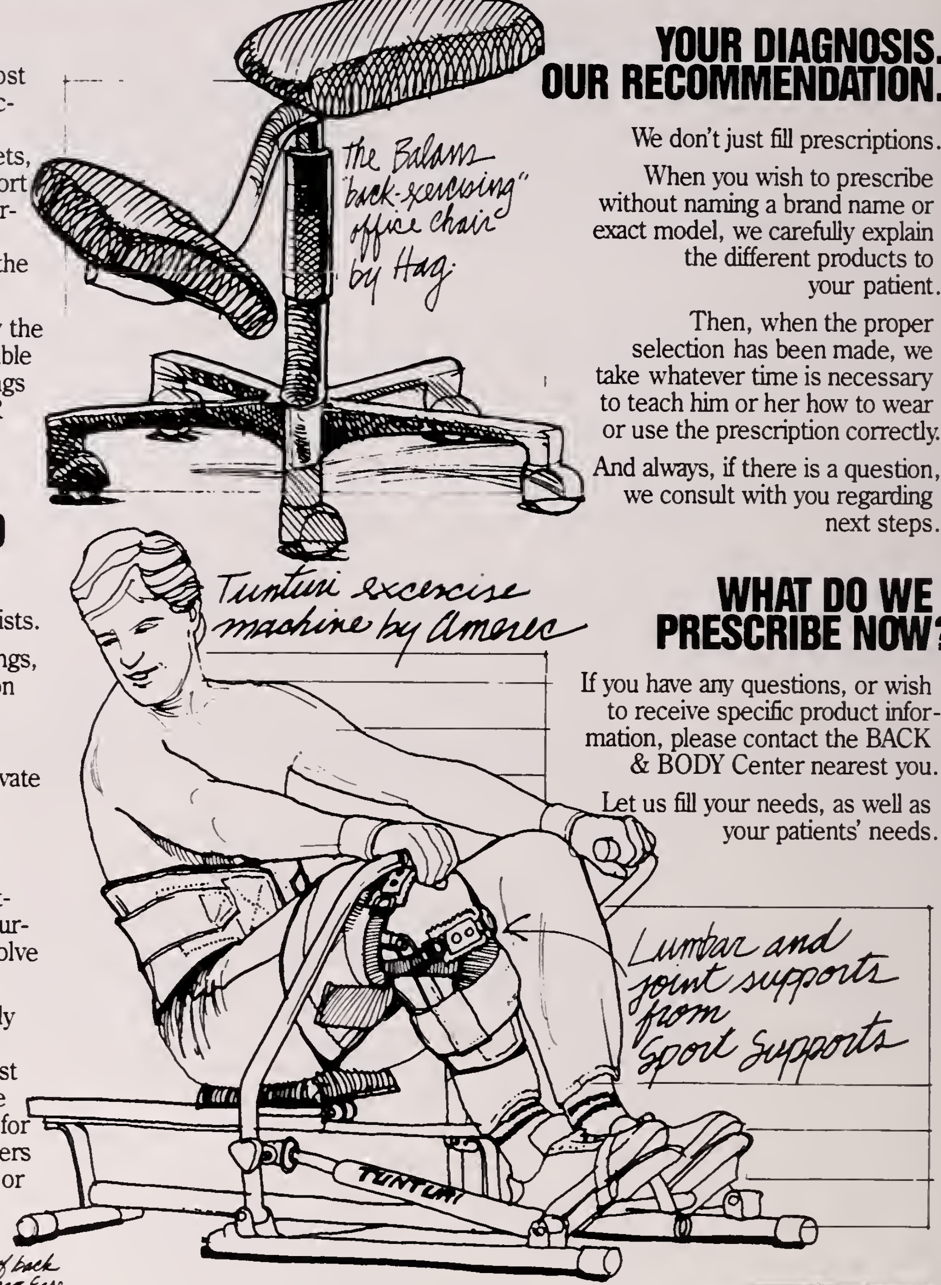
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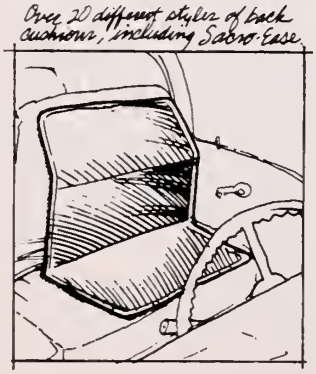
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Evaluation of Female Urinary Incontinence

THOMAS M. JULIAN, M.D.* and KONALD A. PREM, M.D.*

Operations for urinary stress incontinence have a significant failure rate. It is the contention of the authors this failure rate could be significantly reduced by careful preoperative evaluation and in selected cases performing urodynamic studies.

IT HAS LONG BEEN realized that continence in female patients is not an absolute state. Female patients during pregnancy, exertion, times of surprise, and other occasions lose urine more readily than the male. If carefully taken, a history of occasional urinary incontinence at some time or another can be obtained from almost all women. Because of the short urethra, combined with inherent trauma in childbirth, women also develop incontinence secondary to anatomic changes.

Women have symptoms of incontinence secondary to infection, neurologic dysfunction, estrogen deficiency, lack of pelvic muscle tone, and other medical problems. Unfortunately almost all women who complain of incontinence are viewed as surgical candidates. Despite the many transvaginal and suprapubic surgical approaches, failure of surgery to cure female incontinence occurs in 10-40% of patients.[1, 7]

It is our contention that a careful history, physical examination, and radiographic and urodynamic evaluation in combination will successfully identify patients who can be cured by surgery and those who may benefit from medical or symptomatic management. Patients with previously failed operations must be similarly evaluated.

Basic Types of Incontinence

There are two basic types of incontinence: (1) anatomic or true urinary stress incontinence, and (2) incontinence secondary to nonanatomic, underlying factors. The separation of these two types can at times be most difficult. Frequently both types are present.

True urinary stress incontinence is associated with motion of the urethra inferiorly and posteriorly into the potential space of the vagina as a result of loss of urethral support from the pubourethral ligaments, surrounding fascia, and muscles of the pelvic floor. This results in the urethra moving from its normal position as an intraabdominal organ to an extraabdominal organ. When this occurs there is unequal transmission of increased intraabdominal pressure (with coughing, sneezing, laughing, lifting) to the bladder and proximal urethra. The urethra cannot maintain sufficient pressure to exceed the increased intravesical pressure, resulting in involuntary urine loss.

Incontinence secondary to nonanatomic, underlying factors can be a multifactorial problem. Smooth and skeletal muscle activity, urethral length and condition, tissue elasticity, and many other factors must be considered. The most important factor is normal neurologic bladder function.[2]

Brief Neurology of Micturitionc

William Bradley[3, 4] has delineated a system of neurologic pathways categorized into four loops to explain the neurophysiology of micturition:

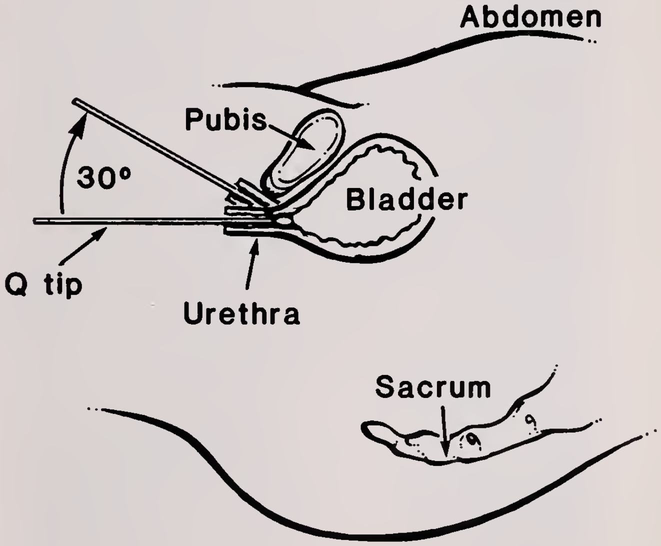

Fig. 1 - The Q-tip test. A Q-tip is inserted into the urethra to the level of the urethrovesical junction. The wooden tail of the Q-tip should transcribe an arc of less than thirty degrees in the patient with good pelvic support.

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1. Loop I: originates in the frontal lobe cortex and terminates in the reticular formation of the brain stem. This loop coordinates volitional control of voiding. Patients with lesions in this loop complain of autonomous bladder function.
2. Loop II: originates in the reticular formation of the brain stem and terminates in the sacral nerve plexus. It allows the bladder wall to contract to empty the bladder completely with each voiding.
3. Loop III: consists of sensory afferents from the detrusor to the sacral cord micturition centers, influencing motor nerve endings in the skeletal muscle of the urethral sphincter. It functions to coordinate the detrusor (inherent contractile capacity of the bladder).
4. Loop IV: originates in the frontal lobe cortex and ends in the nucleus of the pudendal nerve. It allows voluntary inhibition of the urination.

Lesions in any of these loops may cause voiding difficulties not amenable to surgical correction. Parkinson's disease, central nervous system tumor, trauma, cerebral vascular insufficiency, multiple sclerosis, peripheral neuropathy, and other diseases may all present as incontinence.[4]

How to Identify the Patient at High Risk for Surgical Failure

The better the history taken, the greater the accuracy in diagnosing an underlying cause of incontinence. A history directed to identify a specific cause for urinary incontinence will not always be successful, because urinary tract symptoms overlap and are nonspecific. A well taken history may, however, indicate an underlying cause and that the patient does not have simple true urinary stress incontinence.

In general there are five major causes of urinary symptoms: (1) intrinsic urinary tract pathology, (2) extrinsic local anatomic changes, (3) neurologic disorders, (4) psychiatric disorders, and (5) local effects of systemic disease.[2]

The history, pertinent past medical history, and review of symptoms should be directed to these areas. The most reliable history format is a questionnaire modeled after Hodgkinson[6] identifying abnormal urinary symptoms, then grouping them by category to identify patients with: (1) intrinsic urinary disease and stress incontinence, (2) neuromuscular dysfunction, and (3) physical factors causing stress incontinence.

Physical Examination

A thorough general physical examination is necessary. The more accurate and complete, the more accurate the diagnosis. Often a basic problem not related to the bladder is identified.

Examination of the pelvis should include a close examination for atrophy of the external genitalia and vagina suggesting atrophic urethritis, trigonitis, or possibly cystitis. The urethra must be carefully inspected and palpated for evidence of diverticula (2% of patients with incontinence) and possible fistula. Careful palpation of the suburethral tissue may reveal tenderness, induration, or sacculation, suggesting the presence of a diverticulum. Tenderness or expressible pus may suggest underlying infection in periurethral glands.

Special tests that may be performed in the office include: inserting a Q-tip to the level of the urethrovesical junction. The supine patient is asked to strain. With a well-supported urethrovesical junction, the wooden tail transcribes an arc of no more than thirty degrees. If the patient has anatomic incontinence the arc transcribed is usually fifty degrees or greater. The degree of change indicates loss of normal urethral support[5] (Figure 1).

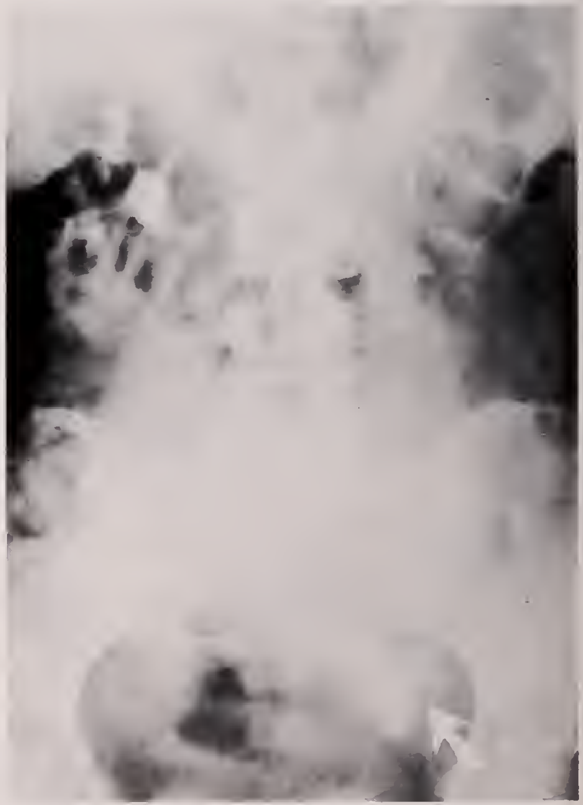

Fig. 2 - The white arrow on the IVP shows a ureterovaginal fistula as the cause of persistent postoperative incontinence.

The Marshall or Bonney test consists of elevating tissues lateral to the urethra at the urethrovesical neck to their normal retropubic position and asking the patient with her bladder full to cough. If no urine is lost, it is assumed that surgical elevation of the urethrovesical neck may be curative. Because many women have stress incontinence only when standing and do not have urine loss in the supine position, this test should be performed with the patient standing. Placement of the examiner's fingers during elevation must be careful assessed. Any obstruction of the urethra by elevation will give a false positive test.

The neurologic examination must be thorough, systematically checking cranial nerves, deep tendon reflexes, muscle strength, sensation, tone, coordination, and specialized reflexes. On pelvic examination perineal sensation and anal sphincter tone must be assessed as well as during coughing. Pressure on the clitoris should cause contraction of the anal sphincter ensuring intact perineal innervation.

Radiographic Evaluation

All patients should have a twenty minute function IVP to rule out obstruction, ectopic ureter, and fistula. If a diverticulum is suspected, a voiding cystourethrogram is indicated. A chain cystourethrogram is helpful to evaluate a previously failed operation before attempting a second procedure. If the anatomic relationships are well restored, surgery will usually be of little value (Figures 2 and 3).

Cystourethroscopy

Cystourethroscopy is performed to evaluate the urethra for mobility, diverticula, atrophy, infection, and the sphincter response to cough. The trigone and ureteral orifices should be inspected for evidence of infection, structural abnormality, and gross lesions.

Urodynamics

Urodynamic evaluation is the main stay in the investigation of patients with unusual complaints

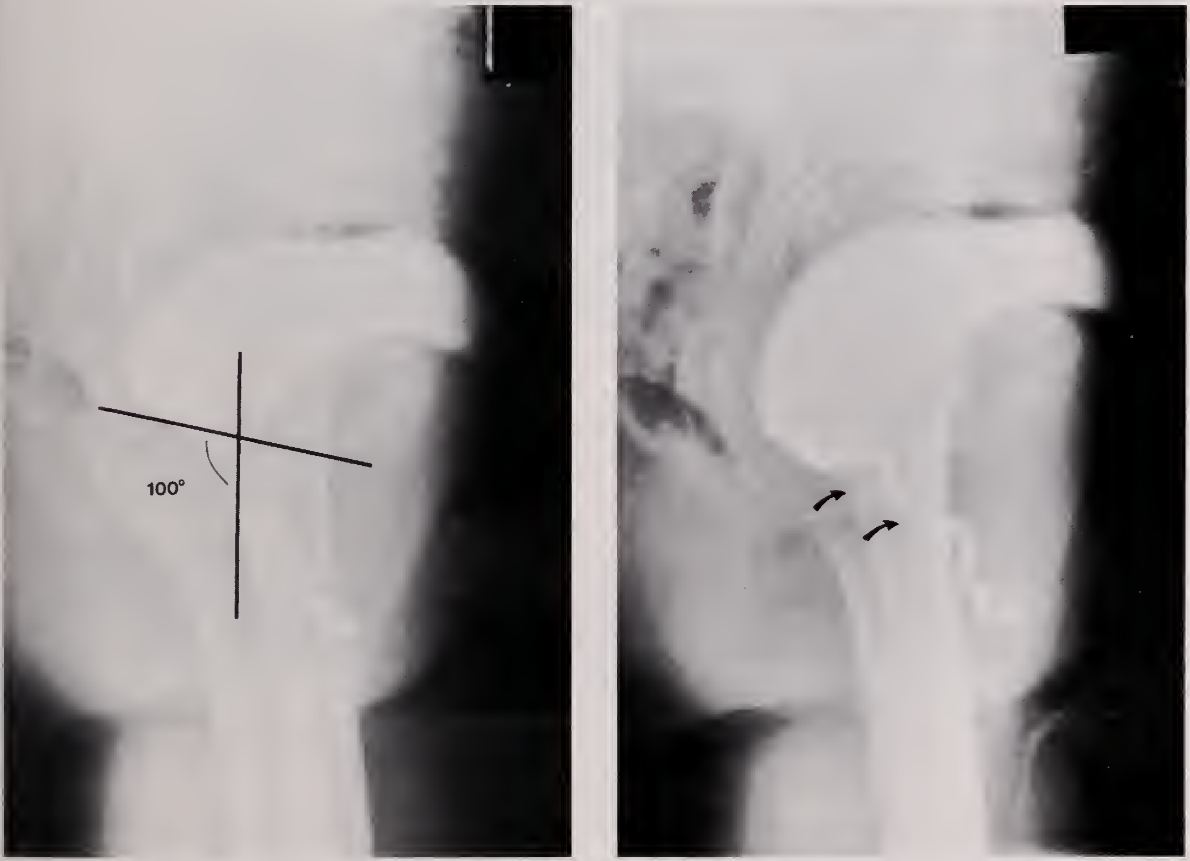

Fig. 3 - Resting (left) and straining (right) chain cystograms show a normal urethrovesical junction, positioned behind the symphysis at rest in this patient with operative failure. When straining the urethra falls away from the symphysis, demonstrating that the surgery has not stabilized the position of the urethra, allowing it to descend into the potential space of the vagina below the pelvic diaphragm.

surrounding voiding. These consist of four separate evaluations: uroflowmetry, cystometrogram (CMG), electromyogram (EMG), and urethral pressure profile (UPP) (Figure 4).

Flow studies-evaluate bladder anatomy and function simultaneously by measuring bladder capacity, residual urine, and flow rates.

Cystometrograms are performed in standing and supine positions using small caliber transurethral pressure sensitive catheters, which measure intravesical and intraabdominal pressures. Cystometrograms can be performed with carbon dioxide or water, using single, double, or multiple channel measurements. These document uninhibited bladder contractions and allow objective assessment of the patient's subjective feeling of first sensation of filling, first urge to void, and bladder capacity. The studies are the most definitive in recognizing neuromuscular dysfunction and also facilitate selection of pharmacologic therapy (Figure 4).

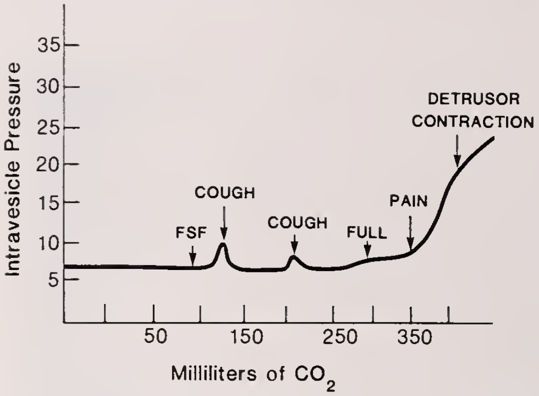

Fig. 4 - A normal cystometrogram showing first sensation of filling (FSF), a rise in pressure with a cough, capacitance of the bladder with filling, a normal bladder capacity, and finally an involuntary contraction beyond this patient's sensation of pain.

A surface electromyogram done through a surface catheter or electrode helps in defining the abnormal detrusor responses as well as normal response of the pelvic musculature.

Lastly, a urethral pressure profile can be performed by withdrawing a small caliber pressure sensitive catheter through the urethra at a measured rate and observing changes in intraurethral pressure. This allows assessment of functional urethral length and pressures generated by the voluntary and involuntary urethral muscles. Both measurements are of value in selecting surgical approaches to therapy and diagnosing possible urethral instability (Figure 5).

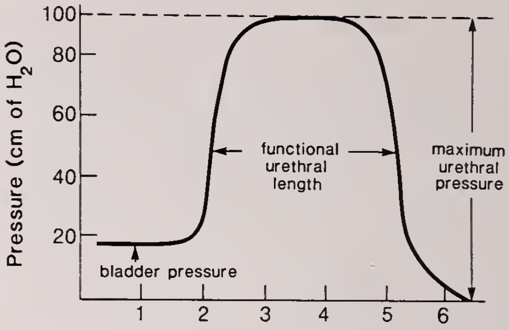

Fig. 5 - A urethral pressure profile showing both the functional length of the urethra and its maximal exertion of pressure.

Summary

Not all female incontinence is due to pelvic relaxation. Up to twenty percent of incontinence operations are immediate failures and more may fail as time goes on. Why do these fail? There are only three possible solutions: (1) the patient did not have a surgically correctable lesion; (2) the surgeon did not correct the abnormal anatomy; and (3) the patient has a second problem in addition to true stress incontinence.

The entire focus of diagnosis and therapy for the patient complaining of situational incontinence is to identify nonsurgical candidates and triage them for evaluation and therapy. A careful history aimed at identifying problems and a directed physical examination should alert the clinician to incontinent patients with complex etiologies. These patients should all then have a urine culture to rule out infection. If simple infection is not the cause, a more sophisticated radiographic, endoscopic, and urodynamic evaluation is needed. Even in patients without other symptoms, a screening CMG may be indicated.

Finally, when identified, patients with complex problems can be referred for attempts to achieve continence with pharmacologic treatment. If these steps are followed, a significant decrease in operative failures might be attained. Each operative failure must be evaluated as a new candidate including all the steps outlined.

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Pseudomembranous colitis has been reported with the use of cephalosporins (and other broad spectrum antibiotics); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with antibiotic use. Treatment with broad spectrum antibiotics alters normal flora of the colon and may permit overgrowth of clostridia. Studies indicate a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind the toxin *in vitro*. Mild cases of colitis may respond to drug discontinuance alone. Manage moderate to severe cases with fluid, electrolyte and protein supplementation as indicated. Oral vancomycin is the treatment of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile* when the colitis is severe or is not relieved by drug discontinuance; consider other causes of colitis.

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DOSAGE: Adults — For respiratory tract infections (other than lobar pneumonia) and skin and skin structure infections: 250 mg q. 6 h or 500 mg q. 12 h. For lobar pneumonia: 500 mg q. 6 h or 1 g q. 12 h. For uncomplicated urinary tract infections: 500 mg q. 12 h; for more serious UTI, including prostatitis, 500 mg q. 6 h or 1 g q. 12 h. Severe or chronic infections may require larger doses (up to 1 g q. 6 h). For dosage recommendations in patients with impaired renal function, consult package insert.

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Locating Nonpalpable Breast Lesions for the Surgeon

State of the Art

H. CHARLES WALKER, JR., M.D.;* JOHN P. DELANEY, M.D.;† and EUGENE GEDGAUDAS, M.D.**

The emphasis in the control of breast cancer has shifted from the management of obvious cancers to the detection and removal of occult lesions. An important technique to attain this goal is mammography with needle localization for biopsy. The risk of the technique as described in this paper is negligible. This approach permits cancer treatment when the tumor is most likely to be curable. These methods should be standard in all hospitals equipped for mammography.

As RADIOGRAPHIC IMAGING TECHNIQUES have progressed, there has been increasing emphasis on detecting breast cancers before they become palpable. The method to attain this goal is low-dose mammography. The value of screening mammography was established in the Breast Cancer Detection Demonstration Project (BCDDP), jointly sponsored by the American Cancer Society and the National Cancer Institute.[1] For nonpalpable lesions under 1 cm, mammographic findings alone led to biopsy in 59% of the noninfiltrating cancers and 53% of the infiltrating cancers. These patients with small lesions had the lowest frequency of involved axillary lymph nodes.

Mammography may have a profound impact on the ability to detect and remove early breast cancer.[2] However, because the lesions detected by this method are often nonpalpable (occult), they can be extremely difficult for the surgeon to find during the biopsy procedure.[3] Needle localization provides the necessary guidance and virtually guarantees the removal of even the smallest suspicious lesion through a small incision with minimal sacrifice of normal breast, thus producing little breast deformity.[4] It is essential in the management of such lesions.[5]

This report describes our experience with 84 consecutive localization procedures at the University of Minnesota Hospitals (UMH) and reviews the role of this and other methods for the early sampling of occult breast cancers. Because most of our patient population was referral, we found a higher incidence of invasive malignant lesions than would be expected in a routine screening series, but the diagnostic criteria and techniques are generally applicable.

Patients and Methods

This retrospective study included patients seen between June, 1976 and July, 1983. The clinical records, mammograms, and pathology reports were reviewed in 84 patients who underwent percutaneous needle localization of nonpalpable radiographically visable lesions. Localization could be performed only if the mammographic abnormality was identified on both the lateral and caudad views. One localization was performed on a patient suspected of having recurrent abscess deep in the breast; the rest were "suspicious for malignancy." In the first years of study, we used a CGR generator and an IMAC tube for xeromammography. More recently, we have used the ELSCINT mammographic unit and the xeroradiography 125 system.

The needle localization procedure is performed under mammographic control. It can usually be performed without local anesthesia. Horizontal and vertical coordinates are determined from the craniocaudad and lateral mammograms according to methods described by Feig.[6] The coordinates are transferred to the patient's skin as a single point over the lesion. The needle length is selected according to the depth of the lesion. The needle is then inserted to its full extent and secured with a Steri-strip.

The mammograms, taken to verify correct needle position, must be done with the breast compressed. The necessity of compression and the location of the lesion helps to determine whether the needle is inserted perpendicular to the skin or parallel to the chest wall. In determining the site of needle insertion, some compensation for magnification and compression is necessary.[6] Pendulous breasts may require some variation in technique. If the tip of the initial needle is not within the desired 1 cm distance from the lesion, a second needle is inserted for correction using the first as a guide.

If the needle is left in place as a marker, it may be dislodged when the breast is prepared for operation. Therefore we have found a modification of the "spot" method most satisfactory.[7] Using a 1 ml tuberculin syringe, 0.5 ml of methylene blue is deposited with the needle tip within 1 cm of the lesion. A small track of blue dye is left as the needle is withdrawn.

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It is desirable that the radiologist personally review the localization films with the surgeon. The location of the lesion relative to the needle tip must be clearly marked on the mammograms which accompany the patient to the operating room.

When feasible, the surgeon performs a circumareolar incision with its center in line with the needle track. The track of dye is followed from the skin to the deposit near the lesion. With the localization mammograms as a guide, the surgeon determines whether compensation is necessary as he excises the blue stained tissue. Specimen radiography can be helpful when clustered microcalcifications is the principal radiologic finding.[8] Excellent specimen radiographs have been produced using either mammography equipment or the Faxitron apparatus in the surgical pathology laboratory.

Results

With close cooperation between the mammographer, the surgeon, and the pathologists biopsies performed with the help of needle localization should be successful in removing the occult lesions. Followup has revealed no false negative biopsies to date. In one instance, biopsy had been attempted without localization and had to be repeated later with needle localization.

Twenty-one of the 84 lesions proved to be malignant (Table). A quarter of the patients were under the age of 50. The youngest was 39-years-old. Seven tumors were intraductal or lobular carcinomas in situ, whereas 14 proved to be infiltrating ductal carcinomas. Tumor was found in the axillary lymph nodes of four of the patients with infiltrating carcinomas, but in each instance no more than four nodes were involved. Axillary node dissection was negative in the four patients with intraductal carcinoma.

In the remaining 63 patients the lesions were benign. In some cases more than one benign lesion was present. The average age of these patients was similar to those with carcinoma. The youngest was age 23; one third were under age 50. Fibrocystic disease was the most common diagnosis (48 cases), and in four of these, there was severe atypia that led the pathologist to recommend close followup for possible later development of carcinoma. Four other patients with fibrocystic disease had intraductal papillomatosis. Fibroadenomas were found in nine patients, sometimes accompanied by a peripheral inflammatory reaction that accounted for the irregular spiculated appearance, simulating carcinoma, on mammography. A suspected recurrent

TABLE

	Mammographic Findings		Histology	
Age	No. Microcalcif	Size of Mass (mm)*	(No. Pos. Nodes)	Treatment
39	5	—	Lobular ca in situ	Bx, SCM
59**	6	—	Infilt. ductal ca	MRM, AND
53	8	—	Infilt. ductal ca (0/26)	MRM, AND
53	6-7	—	Infilt. ductal ca (0/26)	MRM, AND 54**
4	4×5	Intraduct. ca (0)	MRM, AND	
60§	10+	6×9	Intraduct. ca	SM
61Λ	10-15	5	Infilt. ductal ca (0/35)	Bx, Cx
55**	15-20	5	Intraduct. ca (0/35)	MRM, AND
48	30-40	10×20	Infilt. ductal ca (2/18)	MRM, AND
64	—	6	Infilt. ductal ca (0/20)	MRM, AND
80	—	7	Infilt. ductal ca (0)	MRM, AND
71**	—	10	Infilt. ductal ca (1/27)	MRM, AND
56	—	14	Intraduct. ca (0)	MRM, AND
48	—	5×10	Infilt. ductal ca (4/13)	MRM, AND, ACx
64	—	7×9	Well-diff. ductal ca (0)	MRM, AND
59	—	10	Infilt. ductal ca (0)	MRM, AND
52**	—	15	Lobular ca in situ	Bx
60Λ	—	10×13	Infilt. ductal ca	Bx, Cx
46	—	15	Infilt. ductal ca (4/52)	MRM, AND, ACx
57	—	4×5	Infilt. ductal ca (0)	MRM, AND
66	—	6	Infilt. ductal ca (0/8)	MRM, AND

*Mammographic size not corrected for magnification (approx. 25%).

Bx = excisional biopsy; MRM = modified radical mastectomy; AND = axillary node dissection; Rx = radiation; SM = simple mastectomy; Cx = chemotherapy; ACx = adjuvant chemotherapy; SCM = subcutaneous mastectomy.

**Mammography performed because of earlier cancer in contralateral breast.

§Mammography performed because of paraneoplastic syndrome.

ΛMammography performed because of metastatic adenocarcinoma from unknown primary.

breast abscess was confirmed.

Discussion

Breast carcinoma is the leading cause of death from cancer in American women. In 1969-71, it accounted for 27.7% of all non-skin cancers in female patients in the Minneapolis-St. Paul area.[9] Regular physical examination, self-examination, and mammography are the screening methods which can increase the survival rate in asymptomatic women over 50 years of age.[10] There is considerable evidence that mammography can similarly benefit 40- to 49-year-old women.[11] The American Cancer Society recommends baseline mammograms for asymptomatic women at age 35 to 40, with an annual mammogram after age 50.[10] Several studies have demonstrated the ability of mammography to reveal occult lesions and thus lead to treatment of cancers when they are most easily cured.[1, 2, 12, 13] Despite this evidence, mammography continues to be misunderstood and underutilized.[14] For example, in a small survey approximately half of a group of general surgeons considered mammography seldom or never helpful.[2]

Another reason for the resistance to mammography is the fear of radiation-induced cancers engendered by stories in the news media in 1976. In the last few years, however, the diagnostic sensitivity of mammography has improved, and the radiation dose has been reduced to only one-quarter to one-half (approximately 40-100 m rad per breast) of that used previously.[15] The benefit of detecting early breast cancer far outweighs the minuscule risk of radiation-induced cancer in the middle-aged to elderly population.[16]

The mammographic findings that most often indicate occult carcinomas are a mass, clustered microcalcifications with or without a mass or architectural distortion. The postmenopausal breast is involuting. Any increasing density demands biopsy in this age group. Followup mammograms at three to six month intervals for at least two years are recommended for nonpalpable abnormalities such as uncalcified masses, asymmetrical densities, or clusters of microcalcifications that are believed to be benign and therefore not biopsied.[17]

Because most nonpalpable lesions are benign, one objective of biopsy is to remove as little tissue as possible. Mammographic needle localization with dye injection is the most precise means of marking the lesion for the surgeon. Many methods have been described, [18] most of which are satisfactory once the radiologist has the necessary experience, and the team of radiologist, surgeon, and pathologist is functioning well. We use a modification of the method described by Feig, [6] although, many of our surgeons prefer the injection of dye to leaving the needle in place. Dispersion or absorption of the dye has not been a problem even when the biopsy was delayed for as long as two hours. With the method we employ, it appears superfluous to add water soluble contrast to the methylene blue. Most biopsy procedures after needle localization are currently performed in an ambulatory surgery unit. With precise localization, most biopsies require only local anesthesia.[19] We also have used the wire hook method for localization.[20] To prevent migration, one can fasten a small metallic stabilizer at the external end of the wire.[19] In our hands the wire hook method is cumbersome and less dependable than dye injection.

There are other approaches to the evaluation of nonpalpable breast lesions, several of which we have used. For example, fine-needle aspiration for cytologic examination or core-needle biopsy can be performed under mammographic or ultrasonic guidance. The failure rate of fine-needle aspiration biopsy is high; in one series, there was a 25.7% false-negative rate.[21] Galactography may be of value if there is a pathologic nipple discharge.[22] Occasionally, occult carcinoma is found fortuitously in the vicinity of a mammographic abnormality. Some surgeons, therefore, believe that the biopsy should include generous margins, obviating precise localization.[23] We believe that such a policy will result in lesions being missed at operation.

Recent medical advances, including low-dose mammography and localization techniques, have increased the options for the treatment of breast cancer. Because of the extensive efforts at public education by the American Cancer Society, women's health groups, and others, many women are aware of the alternatives and expect to have them discussed and to participate in the choice of treatment. The team approach is a challenging new concept in the diagnosis and treatment of breast cancer.$_{24}$ Combining the skills and knowledge of multiple disciplines is in the best interest of the breast cancer patient.

Acknowledgment

We thank Ms. Sue Lund, R.T., for technical assistance.

References will be found on page 462.

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Breast Cancer and Lactic Acidosis

An Unusual Metabolic Complication

RONALD W. ELLIS, M.D., F.A.C.P.*

LACTIC ACIDOSIS IS GENERALLY CLASSIFIED INTO TWO TYPES. In type A, which is the most common, there is evidence of poor tissue perfusion and/or impaired oxygenation. In type B there are diverse causes such as liver disease, diabetes mellitus, neoplasms, and drugs. A common underlying pathogenesis is not evident.

In this report a patient with breast cancer with extensive involvement of bone marrow developed severe metabolic acidosis due to the lactic acid accumulation. The case is unusual in regard to the underlying cause of the lactic acidosis and to the fact that there was limited involvement of the liver.

Report of Case

A 67-year-old woman was found to have undifferentiated carcinoma of the breast with one of seven lymph nodes positive for tumor. Estrogen receptors were negative. She underwent six cycles of adjuvant chemotherapy consisting of Cytoxin, Methotrexate and 5-FU. She tolerated the chemotherapy well until the last cycle when she developed nausea, vomiting, headache, and a right sixth nerve palsy. A CT brain scan and spinal fluid examination were negative. Because of intermittent headaches the patient was treated with Propranolol and occasional Ergot drugs with some improvement in the headaches. The symptoms stabilized over a period of several weeks. Ten days prior to admission she had the recurrence of severe intermittent headaches and vomiting episodes. The patient had evidence of slurred speech and continued evidence of right sixth nerve weakness. A repeat CT scan of the brain and spinal fluid examination were negative. Calcium of 13.6 mg% was noted. A bone scan showed a questionable area of increased activity in the right postero-lateral calvarium. The remaining scan was normal. Alkaline phosphatase was 152 u (normal 25-100 u), LDH 285 u (normal 0-90 u), SGOT 184 u (normal 0-40 u).

On admission the serum electrolytes were: NA+ 141 Meq/1, K+ 4.2 Meq/1, C1-93 Meq/1 and C02 25. A liver scan was normal. The patient was treated with IV fluids consisting of 0.45% saline and D5W and Prednisone 60 mg daily. There was only a slight effect on the serum calcium level, which fell to 12.5 mg/dl. Subcutaneous calcitonin, 200 units twice daily, was added with a fall of the serum calcium to 11.9 mg/dl. She was found to have a platelet count of 75,000, hemoglobin of 15.3 and WBC of 7,800. Because of the continued hypercalcemia the patient was treated with Mithromycin 25 micrograms/kg. This brought the serum calcium level down to 9 mg/dl. When she was rehydrated, bicarbonate of 7 Meq/1 was noted. Arterial blood gases showed a pH of 7.30, PC02 27 vol.%, P02 90 vol.%, and bicarbonate 13. Serum ketones were negative; creatinine was .9; serum lactate level was 170 mg/dl (normal 9-20 mg/dl). A repeat serum lactate three days later was 164 mg/dl. The patient was not treated with sodium bicarbonate. A bone marrow biopsy demonstrated metastatic adenocarcinoma of the breast. She was given a single dose of 100 mg of Adriamycin. The patient became febrile and was started on Ticarcillin and Tobramycin. She developed granulocytopenia, hypotension, and expired. Blood cultures grew out staphylococcus aureus.

Postmortem examination demonstrated extensive metastases to the bone marrow. The liver demonstrated moderately severe fatty metamorphosis and multiple small areas of metastatic tumor. These measured about 1-2 mm in diameter and were not visible grossly.

Discussion

This patient had evidence of severe metabolic acidosis due to lactic acid accumulation. She had normal blood pressure and evidence of adequate arterial oxygenation until the terminal stages when evidence of septic shock was present.

While lactate is produced by most tissues, the brain, red cells, skeletal muscle, and skin are the major sources; whereas the liver and kidney are the major sites of utilization. It is commonly stated that the capacity of the liver to metabolize lactate is enormous. Other data suggest that its ability to increase lactate clearance is limited, and in most clinical settings lactic acidosis develops because peripheral lactate production outstrips utilization or there is a combination of overproduction and underutilization.

As judged by medical literature review, lactic acidosis is a rare complication of neoplastic disease in the absence of cardiovascular collapse or other reasons for impaired tissue perfusion. Of 25 cases reviewed in the French and English literature, 19 cases involved acute leukemias and lymphomas, while six cases of solid neoplasms were reported. Of these, three cases involved lung cancer, one colon cancer and two breast cancer.[1] In almost all cases there was extensive involvement of liver either with metastases or blast infiltration. There has been an occasional report[2] in which the liver was free of neoplastic involvement.

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The pathogenesis of lactic acidosis in neoplastic disease is poorly defined, and the explanations offered all remain hypothetical. Leucocytes and neoplastic cells in general have high rates of glycolysis, and in the case of large tumors or a tightly packed bone marrow, oxygenation can be decreased favoring production of lactate. Microvascular aggregates and leukostasis could be responsible for local tissue hypoxia and increased anaerobic metabolism.[3]

In most instances liver involvement may play a significant role in favoring accumulation of lactate and its associated hydrogen ion. On the other hand, there are cases reported[2] in which there is no evidence of liver involvement, or patients such as ours, in which liver involvement is too minimal to account for the accumulation of lactate. It is likely that there is a spectrum of situations in which overproduction and underutilization play varying roles.

The management of lactic acidosis due to cancer should be directed at the underlying neoplasms.[4] In those instances where the underlying disease responded to therapy the lactic acidosis improved. The use of bicarbonate in the management of lactic acidosis in cancer patients is controversial. Some reports indicate that bicarbonate therapy stimulates lactate production.[2] These authors suggest that changes in blood pH do not necessarily reflect cellular pH. Indeed, when dogs with experimentally induced lactic acidosis are treated with bicarbonate, blood lactate rises, liver and muscle pH fall, and cardiac output falls. Mortality is greater in dogs treated with bicarbonate than in animals treated with saline.[5]

Dichloroacetate has been used to treat lactic acidosis associated with poor tissue perfusion and demonstrated improvement in metabolic and cardiovascular status, but no significant improvement in mortality.[4] There have been no published reports using this drug in patients with underlying malignancy as the cause of the lactic acidosis.

Finally, it is of some note that this patient had a normal bicarbonate level when she entered the hospital and developed the evidence of metabolic acidosis only after receiving rehydration with saline and glucose. Analogous situations in which hypertonic glucose administration seemed to induce lactic acidosis have been reported.[6] Experimental models suggest that the absolute consumption of glucose by the tumor is proportional to the amount available. It is possible that as the availability of glucose increases the tumor may increase its use as well as lactate production. This potentially could cause problems for patients with neoplasms who receive hyperalimentation. However, this widely used procedure apparently is not being reported to cause lactic acidosis in cancer patients.

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INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris. All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin.

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg. below 90 mmHg) Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory. The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined. However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months.

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known. However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

Isosorbide dinitrate acts directly on vascular smooth muscle, therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related. In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg; for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose. In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg); Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg); Sustained Action Tablets (40 mg)

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Juan Luis Vives - A Sixteenth Century View of the Medical Profession

RAYMOND D. CLEMENTS, Ph.D.*

WHAT KIND OF a reputation did medicine enjoy in the sixteenth century - an age of progress? Ask someone who was there - Vives, a true literati of the period. For one of the surest indices of the esteem the medical profession enjoys in any age are the comments about it by the literati of the other professions. More than serving as opinions, the comments often exert a more profound influence upon the medical reputation than the medical discoveries or advances of the era. Often critical, even at times unfair, they nonetheless serve even today as powerful jolts to the complacent and as effective spurs to progress.

Today, when the medical profession is assailed on all sides by cries of rising health care costs, Medicaid/Medicare inadequacy, self-serving peer policing - this despite unprecedented strides in every branch of medicine - it's nice to realize that our age is not unique. This was as true of the medical profession, as it was of the clerical profession, during the renaissance in Western Europe (13th to 16th centuries).

As in our day, the renaissance saw not only the flowering of a vocal and critical literati but profoundly basic alterations in the approaches to the physical sciences, including medicine. As now, basic science could not flower in an arid intellectual climate. Nor could an intellectual climate flower without progress in the basic sciences. Then and now, anything less produced only sophistries - angels dancing on a pinhead!

Such was the climate in which the sixteenth century Spanish philosopher, educator, and humanist writer, Juan Luis Vives, flourished. Vives was born and received his early education in Valencia during the historical epoch of the Spanish subsidized voyages of discovery to America, events as awe inspiring to Vives and his contemporaries as the space voyages of our day have been to us. The Spain of his day had inherited strong Arabic influences from the Moorish occupation, including the humane treatment of the mentally ill and the retarded. Indeed, the first truly mental health hospitals in Europe arose in Spain during this epoch and influenced Vives' writings.

Educated in Valencia, Vives furthered his graduate education at the University of Paris where he became a friend of the older and well-known Desiderius Erasmus (1466-1536), author of a biting lampoon of the pseudo-intellectual dilletantes of the day, titled "The Praise of Folly." Erasmus was an extremely competent Biblical scholar and educator. Vives shared much of Erasmus' Protestant spirit of rebellion against the established Catholicism with its emphasis then upon ritual and a hierarchical formalism. Finishing his studies in Paris, Vives accepted a teaching post in the English court of Henry VIII where there existed a large Spanish enclave. During the course of Henry's political and military struggles with Spain and the Papacy, including his divorce action from his Spanish-born Queen, Catharine of Aragon, Vives was deported and subsequently held a teaching post in the Classics at the University of Louvain. His familiarity with the Latin and Greek classics pervades many of his writings. However, he was particularly influenced by the Arabic transmitted writings of Aristotle which formed an intellectual substructure for the Galenic medical writings of his day.

During this period of his life, Vives formulated the psychological concepts of the Association of Ideas evolving in the individual from early childhood, as well as the concept that the emotions should be studied from a physiological, not just an ethical, point of view. These two concepts were to play significant roles in the evolution of the Freudian analytical and Watsonian behaviorist schools. Vives expressed very definite and influential ideas about the medical profession of his day.

In 1531 Vives published a small book intended as a critique of the major professional specialties of his day. He touched on their historical development, current status, effective techniques for teaching them, and their professional ethics. Included in this work were two detailed chapters "On Medicine" and "On Training the Physician." These chapters deserve a special niche among the masterpieces in the history of medicine. In them, Vives was not a bombast or anatomist/reformer in the style of Vesalius (1514-1564), often called the "Father of Modern Anatomy." Rather, he skillfully blended a deep historical perspective with high ethical considerations, and, uniquely among early reformers, recommendations gleaned from the medical profession itself. Granted that the texts and curricula content have since changed, many of Vives' basic recommendations still stand the test of time.

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*Doctorate in the History of Culture and Medicine, University of Chicago. Presently lives in Jeffersonville, Texas.

In his chapter "On Medicine," he premises that medicine began empirically. General medical principles evolved as a result of the case method. Such principles, however, must be constantly modified to suit particular constitutions, environments, and seasons. Failure to account for such variants or to exercise good judgment in their applications can prove disastrous. He tells us in no uncertain terms that whenever any theoretical system and judgment are not verified by experience, the resultant medical system becomes not an art but pure accident and temerity.

Good medical practice does not consist of memorizing answers from a textbook but of learning general approaches and specific applications. Conversely, mere experimentation without a well-founded, carefully thought out rationale, is equally hazardous. The sick are especially prone to fall for the first promise of a cure. While false promises can cause some patients to develop a mortal fear of the medical profession, too often such promises cause the patient to turn to a succession of quacks and charlatans. It is interesting to note in this connection that the then-incurable venereal disease, syphilis, was beginning to make its first inroads into Europe. Few diseases in the history of man have led to as many frenetic searches for instant cures and spawned as many quack remedies. Vives' father-in-law had apparently contracted it. As Vives saw it, the great medical evil of his time was the promise of cures for fees. He observed that in his own day the poorest excuse for a doctor could make a living even in the most sordid village where the names of the other professions were completely unknown. As with quacks in our day, he noted that they were quick to justify their medical competence by claiming patient disobedience, the patient not seeking help in time, or the disease being terminal anyway.

Much as a physician today can fall into the trap of sales-promoted pharmaceuticals without an updated knowledge on his own part of the limitations or counterindications for usage, so in Vives' day, the literature began exploding as a result of rapid and faulty translations of textbooks from the medical/scientific Greek language sources. Even the standard medical texts of Hippocrates, Galen, and the pharmacologist Dioscorides were filled with errors of translation, not to mention the incorporations into the texts of margin notes by lay copyists and printers/editors. He noted that only in his own day were these works and those of the seventh century Byzantine medical compiler, Paul of Aegina, beginning to be corrected by such scholars as the English humanist physician, Thomas Linacre (1460-1524). In simple terms, the medical source materials of his day suffered much the same plight as the works of Freud did when first introduced into the English language. Compound fractures, malaria, hemorrhaging ulcers, and depressed skull fractures, can't wait to be cured analytically particularly if the wait stretches over several centuries!

Vives goes on to ridicule the habit of some practitioners resorting to arguments and sophistries to fill the gaps of knowledge. No amount of debating and groundless assertions can take the place of an adequate knowledge of pharmacology, the essentials of medicine, experience and prudence. Shunning rhetorical, argumentative habits should be stressed.

Vives next turned to a discussion of other habits to be avoided by the physician. Among them are: always attempting to appear original or clever in a diagnosis, disregarding common sense environmental factors affecting an illness, boasting, back-bitting, professional jealousy, and a lack of candid consultative techniques.

He closes the chapter by stressing the dependence of public health upon professional medicine. No better attitude toward professional ethics could be enunciated by any medical society today.

In discussing medical education Vives noted that the first criterion for an acceptable medical student is motivation for a life dedicated to public service. Without such dedication no student can become an effective physician.

Before discussing the general concepts of teaching medicine, Vives briefly discusses the standard medical authors studied in his day: Hippocrates, the father of medicine; Galen, the most quoted medical author from Roman to early modern times in both the Western and Arabic worlds; Paul of Aegina, the Byzantine medical writer who condensed, along with many interpretive errors, a medieval equivalent of the Merck Manual; Scribonius, the first century A.D. Roman pharmacologist who introduced opium into Western medicine and who advocated using a stingray fish for headache; Celsus, also a first century Roman physician who described lateral lithotomy, cataract removal, plastic surgery, tonsillectomy and dental practices; Serenus, a third century physician, who popularized the practice of arranging prescriptions from head to toe; Psellos the Younger (11th century A.D.) who composed a work on balneology, the medicinal properties of minerals and demonology (cf. exorcism beliefs today); Nicander, a third century A.D. Greek pharmacist and toxicologist who first included leeches in therapy, a practice persisting in rural American to modern times; Avicenna, the eleventh century Arabic author of the most important medical text in Europe from the twelfth to sixteenth centuries; Rhazes, a ninth century Arabic physician noted for his clinical description of smallpox and measles, which was often quoted even in nineteenth century literature; Averrhoes, a twelfth century Arabic physician who compiled a text on general medical principles; the two Mesues, ninth and tenth century Arabic authors on ophthalmology and pharmacology, standard medical texts in Europe for centuries. Vives continues with a discussion of medical curricula.

The curricula should begin with the study of anatomy. The stress on anatomy is consistent both with late medieval Italian medical school emphasis and the rise of the Italian Renaissance schools of painting emphasizing human anatomical detail, culminating in the detail drawings of such anatomists as Vesalius.

Next, the student should study general or nonspecific illnesses i.e., what we might term illnesses not specifically related to trauma. Each illness should be related to its origin, situs, progress, symptoms, reactions, results and residual effects.

The student should then by taught Materia Medica. Contrary to present day popular belief, the pharmacology in medieval and renaissance times was rational and empirical, albeit not always up to our pharmaceutical standards. A sharp division existed between empirical medicine, the province of the physician, and the spiritual or occult, the province of the ecclesiastic. Unfortunately this division was a double edged sword tending to cleave the psychosomatic from the medical. This is a principal reason why Vives' treatment of the emotions as physiological entities was so unique for his time.

Vives then proceeds to emphasize the value of teaching the consultative method, bedside teaching, and clinical internships.

Interestingly then, Vives notes that some students should plan to devote themselves to general practice while others should specialize in consultative practices. Still others should devote their lives to teaching and publishing. The student should be taught never to become overly involved in outside or commercial pursuits. Vives earnestly felt that even a lifetime is too short to learn enough about medicine.

Turning to experimentation, Vives advocates the use of rats and guinea pigs. If a human subject must be used, only subjects constitutionally strong should be used. He does not mention heroic or last resort treatments of the debilitated or terminal patient.

In the conduct of his everyday practice, the physician should be taught to employ good bedside manners, to dress appropriately and to guard his own health. At the very outset of a visit to a patient, he should take a good case history, avoid guessing and taking lay opinions and observations at face value. He should avoid hasty prognoses and letting his emotions govern his judgment. The physician's personal life should be impeccable. Malpractice for gain should be punished.

In taking a case, the physician should first employ, if possible, a simple dietetic regimen; next, simple remedies and only then, heroic remedies. If these fail, he should call in his fellow physicians for consultations. Above all, differences over diagnoses should never be aired in the presence of the patient. In the absence of trauma, an initial physical was a much later medical practice phenomenon. Uroscopy and excreta descriptions, together with gross symptom complaints, constituted the basis for an evaluation until the rise of pathology, as we know it today.

We may now term a causative disease agent a microbe instead of an invisible little animal (animaculum), but how little has good medical practice changed since the Hippocratic Oath!

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10-17. Will be found on page 442.

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Costs and Benefits of Chemical Dependency Treatment

RICHARD J. LESSARD, M.D.*, PATRICIA ANN HARRISON, B.A.† and NORMAN G. HOFFMANN, Ph.D.**

Cost benefits of chemical dependency treatment are examined in a followup of 190 patients six months post-discharge. A dramatic reduction in medical care utilization accounts for a substantial proportion of estimated cost payback.

Mortality related to alcohol abuse is of catastrophic proportions in this country. Alcohol may be involved in one-third to more than half of all fatal motor vehicle accidents.[1,2] Alcohol use has been implicated in two-thirds of drownings,[3,5] half of all fatal falls,[3] and up to half of all fatal fire deaths.[1,4] Alcohol use has also been implicated in 25% to 80% of all suicides.[5,6]

Cirrhosis was the sixth leading cause of death in 1978[7], and alcohol is involved in an estimated 40% to 95% of these deaths.[5] The mortality rate for alcoholics is 2.5 to three times greater than that for nonalcoholics,[8,9] and the death rate for persons who average six or more drinks daily is about double that for those who drink less.[10] On average, after ten years of alcohol abuse, alcoholics die 10 to 15 years earlier than nonalcoholics.[11]

Morbidity due to alcohol abuse and related costs for medical care are equally staggering. Damage is not limited to cirrhosis but includes other liver pathology, gastrointestinal complications, cardiovascular system disorders, nutritional deficiencies, and central nervous system dysfunction. Heavy drinking is related to increased risk of cancer of several organs. Fetal alcohol syndrome may result in a rate of mental retardation as high as 80%, along with skeletal abnormalities and growth deficiencies.[6,12]

The cost to the family resulting from alcohol abuse is significant. Alcohol plays a role in upward of one-third of reported cases of spouse abuse and child abuse[13,14,15] and has been implicated in child sexual abuse and incest.[16,17] Alcoholism is frequently associated with physical and emotional child neglect.[18,19] Children in alcoholic families are at an increased risk for lower IQ, hyperactivity, and psychological and emotional problems.[6]

Society, as a whole, pays an enormous price for alcoholism and alcohol abuse. In 1975, the cost was estimated at 43 billion dollars based on an analysis of lost production (almost 20 billion dollars), health care expenditures (13 billion dollars), motor vehicle accidents (over 5 billion dollars), violent crime, fire losses, and social responses to combat alcohol abuse. This estimate is conservative, because data omitted costs associated with males younger than 21 or older than 59, skid row alcoholics, and all women.[6]

The study reported here was conducted on the chemical dependency treatment inpatients at St. Paul-Ramsey Medical Center with subsequent followup. Data on physical, social, and occupational impairments resulting from alcohol abuse are presented. Changes during the six months following treatment are documented to underscore that chemical dependency treatment can arrest the illness, create payback in terms of improved physical health and social responsibility, and impact on other major areas of the patient's life. These are benefits reaped by the recovering alcoholic's family and society as well.

Methods

Subjects for this study were 190 individuals admitted to inpatient treatment at St. Paul-Ramsey Medical Center for chemical dependency. The patient population was predominantly middle-aged white males. Initial data was collected after the fifth day of treatment so that the patients tended to have completed detoxification. The data collection consisted of specific and concrete items such as current employment status or the number of hospitalizations for medical problems within the past six months. The intake data was gathered to assess some of the important parameters likely to be affected by chemical dependency during the six months prior to treatment.

The followup consisted of asking the same questions for the six-month period after discharge. Most

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patients were contacted by telephone (86%); 14% returned mailed questionnaires or were interviewed in person. Only 82% of the contacted patients had completed the entire treatment program. Nine percent had been discharged AMA, and 4% for behavioral reasons. Five percent had been transferred to other programs or hospital services.

Results

Of the patients included in this study, 74% were male, 26% female. Ages ranged from 16 to 75 years with a mean age of 36 and a median of 34. Substance abuse appeared to have had a great impact on these individuals in light of their high medical care utilization, extremely poor vocational functioning, and high arrest rate.

The greatest reduction in demand for services among the chemically dependent population is seen in the area of health care utilization (Tables 1 and 2). Detoxifications are reduced to less than one-fourth of the number previously required. Psychiatric hospitalizations are cut to one-third. Hospitalizations for the treatment of medical illness are reduced by one-half. The proportion of patients seeking outpatient medical care drops from 40% to 23%.

TABLE 1

Inpatient Admissions

N = 190

	During Six Months before Treatment	During Six Months before Treatment
	Number	Number
Detoxification Center	48	11
General Hospital for Detoxification	28	4
Medical Hospitalization	55	27
Psychiatric Hospitalization	13	3

TABLE 2

Physician Office Visits

N = 190

	During Six Months before Treatment	During Six Months after Treatment
	Number of Visits	Number of Visits
For Injury	83	27
For Illness	110	28
For Surgery	14	5
Totals	207	60

Occupational functioning shows measurable improvement during the six-month period following treatment. The proportion of patients on welfare drops from 25% to 18%, and the number employed increases from 28% to 37% (Table 3). Table 3 shows marked changes for those working. Whereas 34% of all patients cite problems at work before treatment, only 2% note problems after treatment. The proportion of patients reporting job absenteeism is reduced from 38% to 3%, and the percentage that lost a job during the six-month period falls from 19% to 2%.

TABLE 3

Vocational Functioning

N = 190

	During Six Months before Treatment	During Six Months after Treatment
	Number	Number
Employed	53	68
Unemployed	123	93
Student, homemaker, retired	14	19
Receiving welfare assistance	49	34
Problems at work	57	4
Job absenteeism	64	5
Job loss	32	3

A dramatic decrease in the number of arrests among this population follows treatment for chemical dependency. The total number of arrests drops from 156 to 22 during the two six-month periods. Prior to treatment 35% of the patients report being arrested; following treatment only 6% report an arrest (Table 4).

Discussion

No other illness stirs as much debate over treat-

TABLE 4

Numbers of Arrests

N = 190

	During Six Months before Treatment	During Six Months after Treatment
Related to Substance Abuse		
Misdemeanors	101	12
Felonies	13	5
Unrelated to Substance Abuse		
Misdemeanors	40	2
Felonies	2	3
Totals	156	22

ment costs as chemical dependency. In the treatment of other illnesses, justification of costs usually is contingent solely on whether the available treatment arrests or cures the illness.

However, in light of the tremendous societal expense associated with alcohol and drug abuse, it seems imperative to look beyond abstinence alone to justify treatment costs. If substantial payback can be documented in other areas, a more conclusive cost/benefit picture can be established upon which governmental and third-party payers can base decisions regarding financial support for treatment.

This study served to determine whether an economic payback for treatment costs could be measured. This was done by establishing a rough cost figure related to impairments experienced during the six months before treatment. It was then possible to determine a measurable economic benefit attributable largely to chemical dependency treatment.

No firm payback estimate can be proposed for many reasons. Too many variables are involved which require gross estimates. Arriving at a figure for cost of commission, prosecution, and corrections follow through for a typical crime is a crude process at best. Furthermore, much of the real benefit of reduced substance abuse is not even measurable in terms of dollars.

A fixed dollar amount is assigned more easily to the cost of inpatient treatment than to the resulting benefits derived by the individual and community. The cost of treatment for the 190 individuals included in this study was approximately $3,000 each, for a total of $570,000.

The largest payback resulted from a dramatic reduction in medical hospitalizations during the six-month period following treatment for chemical dependency. Overall, medical hospitalizations were reduced from 55 to 27. Considering the average cost of an inpatient stay at $3,800, this results in a net savings of $106,400 (Table 1 and the Figure).

The next largest reduction of medical expenditures is reflected in the decrease in psychiatric hospitalizations from 13 to three. An average cost of $3,800 produces a cost reduction of $38,000 (Table 1 and the Figure).

Hospitalizations for detoxification purposes were reduced in number from 28 to four. With an average cost of $900 each, a savings of $21,600 is estimated. Savings on detoxification stays at detox centers represent a net reduction in cost of $11,100. The number of such detox stays decreased from 48 to 11; average expense was $300 (Table 1 and the Figure).

Reductions in cost for outpatient medical clinic visits for surgery, illness, or injury provide considerable savings. (Outpatient clinic cost estimates of $41 are computed based on average charges for physician fees and laboratory tests only, and do not reflect charges for medical supplies or Xrays). Surgery visits decreased from 14 to five; a net reduction of nine provides a $369 savings. Illness-related outpatient visits decreased from 110 to 28 for a cost reduction of $3,362. Injury-related visits decreased from 83 to 27, netting a cost savings of $2,296 (Table 2 and the Figure).

Estimates of Six-Month Economic Payback

	Number	Cost	Cost Savings
Reduction in Number of Patients Receiving Welfare Assistance	15	$1,536	$ 23,040
Reduction in Detoxifications	37	$ 300	$ 11,100
Reduction in Hospitalizations for Detoxification	24	$ 900	$ 21,600
Reduction in Medical Hospitalizations	28	$3,800	$106,400
Reduction in Psychiatric Hospitalizations	10	$3,800	$ 38,000
Reduction in Outpatient Visits For Injury	56	$ 41	$ 2,296
For Illness	82	$ 41	$ 3,362
For Surgery	9	$ 41	$ 369
Reduction in Arrests Misdemeanors	127	$ 500	$ 63,500
Felonies	7	$1,000	$ 7,000
			$276,667

Figure

In addition to the significant reduction of medical expenses, there is a noteworthy decrease in the number of arrests following chemical dependency treatment resulting in a net savings of costs associated with arrest, defense, and prosecution. Misdemeanors decreased from 141 to 14. With a conservative projection of cost at $500, this substantiates a net savings of $63,500. Felonies decreased from 15 to eight. Considering an average cost at $1,000, this provides an additional $7,000 savings. Both figures would be greatly increased if the costs of incarceration and rehabilitation were included (Table 4 and the Figure). The cost benefit of treatment would be further enhanced if the reduction of property and human injury losses associated with crime were included.

The study population receiving welfare assistance was reduced by 15 following treatment. With a typical general assistance monthly allotment of $256, a cost savings of $23,040 over six months is estimated (Table 3 and the Figure).

Although the cost saving to the employer is considerable, no attempt was made in this report to estimate cost savings attributable to training costs for new employees to replace those discharged, increased attendance, and improved on-the-job performance (Table 3).

Cost savings related to medical expenses, arrests, and welfare assistance alone total $276,667. This figure divided by inpatient treatment cost of $570,000 suggests an estimated payback on treatment cost of at least 49%. This clearly illustrates why it is essential to weigh the benefits of chemical dependency treatment and not simply decry the costs.

There are certainly factors arguing against attributing all life improvements after treatment to alcohol and drug rehabilitation. There is no data to substantiate that the reduction in arrests, receipt of welfare, and even health care utilization can be ascribed solely to treatment. It needs to be noted that the six months prior to treatment for some individuals, most likely represents a period of "bottoming out," in which life impairment is severe. By comparison, then, the next six months might be expected to reflect some improvement regardless of treatment intervention.

However, there are other factors to suggest that the payback estimate is actually quite conservative. Alcoholism and drug addiction have been noted to be progressive diseases with respect to physical and social degeneration. For a substantial number of patients, physical and social health showed marked improvement subsequent to treatment. This is especially significant, because without intervention conditions are expected to worsen, not merely remain stable. With the documented high morbidity and high mortality among unrecovered alcoholics, society would be burdened with the additional costs of total support of disabled alcoholics and other drug abusers, and the costs of supporting families of those who die prematurely or are institutionalized as a result of substance abuse.

Perhaps ever more significant are the indirect costs and the consequent indirect benefits of treatment to which no dollar sign can be attached, such as costs and benefits to family members of alcoholics and other drug abusers.

The cost to the patient is immeasurable. Costs of treating other diseases are justified on the basis of respect for quality of life; to make a person well is worth achieving. The rehabilitation of the alcoholic is surely as costjustifiable as radiation therapy for the cancer victim or dialysis for the kidney patient.

Conclusions

A six-month followup study of 190 inpatients reflected a 49% payback of treatment costs within six months, when only reduction of arrests, health care utilization, and receipt of welfare benefits were measured. Even though methods involve crude estimates of cost payback for treatment of alcoholism and other drug abuse, such estimates can substantiate a direct and substantial payback of costs of chemical dependency treatment within a short period.

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12-19. Will be found on page 462.

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Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.

Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. Chest 78 (July suppl):234-238, 1980.

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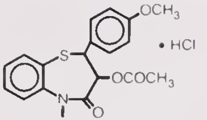
DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5 asthenia (1.2%), AV block (1.1%). In addition, the were reported infrequently (less than 1%) with the tion corresponding to the relative frequency of oc

Cardiovascular:	Flushing, arrhythmia, hypot dia, palpitations, congesti syncope.
Nervous System:	Paresthesia, nervousnes tremor, insomnia, hallucinati
Gastrointestinal:	Constipation, dyspepsia, di mild elevations of alkaline ph SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria
Other:	Polyuria, nocturia.

The following additional experiences have beer

A patient with Prinzmetal's angina experien vasospastic angina developed periods of transie asystole approximately five hours after receiving dose of CARDIZEM.

The following postmarketing events have bee quently in patients receiving CARDIZEM: erythema kopenia; and extreme elevations of alkaline pho SGPT, LDH, and CPK. However, a definitive cause a these events and CARDIZEM therapy is yet to be

OVERDOSAGE OR EXAGGERATED RES

Overdosage experience with oral diltiazem h Single oral doses of 300 mg of CARDIZEM have be by healthy volunteers. In the event of overdosage response, appropriate supportive measures should addition to gastric lavage. The following measures m

Bradycardia	Administer atropine (0.60 to is no response to vagal bloc isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia ab degree AV block should be diac pacing.
Cardiac Failure	Administer inotropic agents dopamine, or dobutamine) an
Hypotension	Vasopressors (eg, dopamine bitartrate).

Actual treatment and dosage should depend on t clinical situation and the judgment and experienc physician.

The oral/LD_{50}'s in mice and rats range from 41 and from 560 to 810 mg/kg, respectively. The intra these species were 60 and 38 mg/kg, respectively dogs is considered to be in excess of 50 mg/kg, wl seen in monkeys at 360 mg/kg. The toxic dose in m but blood levels in excess of 800 ng/ml have not with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atheros nary Artery Disease or Angina Pectoris at Res nary Artery Spasm. Dosage must be adjusted t needs. Starting with 30 mg four times daily, befo bedtime, dosage should be increased gradually (doses three or four times daily) at one- to two-da optimum response is obtained. Although individu respond to any dosage level, the average optimu appears to be 180 to 240 mg/day. There are no availa ing dosage requirements in patients with impaired function. If the drug must be used in such patients, ti carried out with particular caution.

Concomitant Use With Other Antianginal A

1. **Sublingual NTG** may be taken as required anginal attacks during CARDIZEM therapy
2. **Prophylactic Nitrate Therapy**—CARDIZEM coadministered with short- and long-acting ni have been no controlled studies to evaluate effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAU

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottle 0088-1771-47) and in Unit Dose Identification Pa 0088-1771-49). Each green tablet is engraved with side and 1771 engraved on the other. CARDIZEM tablets are supplied in bottles of 100 (NDC 0088-177 Dose Identification Paks of 100 (NDC 0088-1772-4 tablet is engraved with MARION on one side and 17

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Sports Related Injury
Part I

RICHARD E. JOHNSON, M.D.* and ROBERT J. RUST, M.D.†

UNINTENTIONAL INJURIES are the leading cause of death among persons aged one to 38 years, but for most individuals an injury is a single chance event without untoward sequelae or financial complications. A college scholarship or professional salary, however, may ride on the severity of an athlete's injury. Multiple factors will influence the injury ranging from gender, physical condition, physical anomalies, and previous injury to rules of competition, substance abuse, training techniques, equipment, and training services. Satisfactory x-ray examination includes not only the selection of useful plain film views, but also the correct temporal sequencing of exams and the selection of appropriate alternative diagnostic tools (e.g. arthrography, radioisotope scans, myelography, computed tomography, etc.). This first part of a two-part series will deal with individual sports and their associated injuries. Part 2 of this series will adopt an anatomic focus approach.

Baseball

The dominant activity is throwing the ball, and the centers of stress are the shoulder and elbow joints. Of all professional baseball pitchers, two thirds have an abnormal elbow. Xray often shows traction spurs and loose joint bodies. Other injuries include stress fractures of the ribs, rotator cuff tears, and myositis ossificans or avulsion fractures at the insertion of the long head of the triceps brachia on the infraglenoid portion of the scapula. The knee, lumbar spine, and ankle are, in order, the next most common sites of injury. "Baseball" or "mallet" finger refers to loss of extension of the distal interphalangeal joint following injury. Fractures of the digits as well as orbital blow-out fractures are a result of the size and velocity of the projectile.

Basketball

The ankle sprain is the most common injury followed by knee injuries and finger sprains, fractures, and dislocations. Patella or quadriceps tendonitis ("jumpers knee"), Achilles tendonitis/rupture, and stress fractures of the tarsal bones and tibia are injuries common to basketball. Characteristic x-ray changes of the knee include joint space narrowing, sclerosis, loose joint bodies, effusion, hypertrophic spur, tendinous calcification, and meniscal tear documented by arthrography. Xrays of the ankle show bony spurs at the anchor site of the capsule on the dorsal surface of the talus. This is felt to be secondary to running with sudden stops, changes of pace and direction, and jumping. In addition, soft tissue swelling, fracture, and instability of the mortise joint on stress views may also be identified. Serial Xrays of the tibia show formation of periosteal new bone stimulated by stress fracture. Radioisotope bone scan is more sensitive in the early diagnosis of such fractures.

Bicycling

Annually, more than 7,000 lives are lost in pedal cycling accidents. Forearm, shoulder, and head fractures lead the list of bone injuries to bicyclists suffered in collisions or falls. "Handlebar palsy" is a neuropathy secondary to continuous pressure on the deep palmar branch of the ulnar nerve. Parasthesias of the pudendal nerve caused by pressure of narrow bicycle saddles on the perineum occur. Compound fractures of the feet may follow chain or spoke entrapment. Despite the use of protective head gear, concussions and intracranial hemorrhage, and hematoma are seen.

Bowling

"Bowler's thumb" (ulnarvolar neuroma) is related to fibrous tissue proliferation as it occurs secondary to trauma to the digital nerve from the edge of the hole of the ball. Fractures of the bones of the foot from dropped balls and acute avulsion injury of the adductor muscles at their insertion on the inferior pubic ramus have been reported for this sport.

Boxing

The most common injuries seen are head and facial injuries. On a more chronic basis, progressive post-traumatic encephalopathy ("punch drunk" syndrome) manifested by mental confusion and deterioration, unsteady gait or leg dragging, hesitant

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speech, hand tremors, head nodding, vertigo, deafness, and the expressionless facial characteristics of Parkinsonism is estimated to occur in some form in nearly 50% of veteran fighters as a result of chronic head injury. According to Ross et al., there is a significant relationship between the C.T. finding of cerebral atrophy and the number of bouts fought. C.T. examination therefore generally shows atrophy in older boxers. Edema or hematoma can be identified on an acute basis.

The "boxer's fracture" is actually a fistfighters fracture of the fifth or fourth metacarpal, but the most common fracture in a true boxer involves the proximal third of the first metacarpal.

"Blow-out" fractures of the orbit, secondary to direct trauma to the globe and orbit, are best initially evaluated by a Waters' projection of the skull, however, C.T. examination or polytomography of the facial bones is highly accurate to delineate the true extent of the facial fractures.

Football

One in five players is injured annually (1:13 injured seriously). Head/neck injury (60%) and heat illness are the primary cause of football deaths. Avulsion of the transverse processes of the lumbar spine, avulsion fractures of the lesser trochanter at the insertion point of the iliopsoas muscle, traumatic hip dislocation, and myositis ossificans in the thigh are injuries related to football. The knees and hands are most frequently injured. Additional oblique and intercondylar notch ("tunnel-view") x-ray views are recommended when evaluating the adolescent knee as epiphyseal cartilage plate injuries may be a subtle but significant finding. Avulsion of the adolescent's anterior tibial tubercle is usually a result of violent flexion of the knee against tightly contracted quadriceps which leads to avulsion of the quadriceps' site of insertion. Football knee injuries are decidedly affected by the type of surface (synthetic vs. natural), size of shoe cleat, and wet or dry conditions.

Golf

The most common injury in golf is low back strain. "Golfer's elbow" refers to a painful strain at the origin of the pronator muscles on the medial epicondyle. Strain of the lateral epicondylar area is actually more common in golf than tennis. The golfer who hits an object other than the ball or "buries" the club in the ground may experience a fracture of the hook of the hamate second to violent contraction of the flexor carpi ulnaris insertion through the pisiform hamate ligaments. Rib fractures located posteriorly in the fourth through sixth ribs near the shoulder have been reported, and they occur contralateral to the side of the golfer's swing, i.e. left side in a right-handed golfer.

Gymnastics

Sprains and strains with occasional fractures and dislocations of the extremities are the most commonly encountered injuries. The ankle is easily the most injured body area. Trampoline and horizontal bar are the two events associated with the greatest number of serious injuries. Most trampoline injuries occur from landing improperly in the middle of the trampoline, particularly with the "front drop", "back drop", and somersaults. "Wrist splints" are characteristic of the pommel horse specialist, and shoulder injury is the most common of the gymnast on the rings. Low back injuries, which occur as a result of forces generated in dismounts, tumbling and vaulting, are the second most frequent area of injury in gymnastics. Pain may be a symptom of spondylolysis and spondylolisthesis. Oblique radiographs and standing flexion-extension lateral radiographs should be considered after screening AP/lateral exam of the lumbosacral spine. Further radiographic studies may include C.T. and myelography.

Hockey

The most common category of injuries in the hockey player includes fractures of the nose, cheek, and jaw, as well as lacerations of the facial structures and loss of teeth. Uncontrolled body checking, high sticking, and fighting are primarily responsible for the next most common category of injury, i.e. knee, ankle, wrist, elbow and hand sprains, strains, and avulsions. Forwards sustained over 61% of the injuries while goaltenders were the least often injured (7%). The hockey stick was more frequently implicated than the puck in producing injury. This can lead to blunt abdominal trauma with occasional rupture of a hollow or solid viscus. Concussions and intracranial hemorrhage, though less common, still occur despite development of more sophisticated protective headgear.

Motorcycling

Extremity injuries are the most common in nonfatal accidents. The femur is fractured in 80% of the streetbike injuries with an associated high incidence of knee and ankle instability or fracture. The list of injuries parallels that of bicycling, except that the injuries tend to be more severe. Drivers with less than six months experience have twice the accident rate of more experienced riders. Occasionally, nerve root avulsions are encountered, particularly in the cervical region with brachial plexus injury. Although myelography will best demonstrate this injury, C.T. examination can be a valuable adjunct in evaluation.

Track and Field

The lower extremities including the feet and pelvic musculature are the most common areas of injury. In runners, bone injuries are unusual with the exception of tibial or metatarsal stress fractures that may only present late as fluffy periostitis on Xray. Radioisotope bone scan, as previously indicated, can detect these abnormalities before they appear on plain films. The majority of runner's injuries are secondary to muscle, tendon, fascia, or cartilage injury. Chondromalacia is the most common knee problem. "Shin splints" is an aseptic inflammation of the muscle tendon unit brought about by over exertion. This is to be differentiated from tibial stress fracture by Xray or radioisotope bone scan. Stress fracture will show a band of increased activity horizontally located in the tibial shaft. "Shin splints", if severe enough to excite a periostitis, as seen in chronic cases, will show increased uptake in a longitudinal pattern at the origin of the interosseous membrane and tibialis posterior muscle on the posterior medial aspect of the tibia and fibula.

It has been stated that the sprinter and the middle distance track athletes are more prone to injury than are the hurdlers. Javelin throwers risk rotator cuff tears, tears of the interscapular and scapulocostal muscles, and spiral fractures of the middle to distal humeral shaft. Also reported are olecranon fractures, elbow joint loose bodies, and soft tissue calcifications. Highjumpers have been reported to rupture quadriceps tendons and muscles as well as suffer cervical spine fracture and dislocation (especially those that practice the "Fosbury flop" technique).

Skiing

Incidence of injury is estimated at four to seven accidents per 1,000 skiers per day of skiing. Teenagers suffer 50% of the injuries while the expert skier has fewer but generally more severe injuries. The female injury rate is almost two to one over males, and down-hill skiing has a significantly higher rate of injury than cross-country skiing. Eighty percent of all injuries occur in the legs and have generally been attributed to poor release of the bindings. The most common injury of the knee joint is a tear of the medial collateral ligament. Knee and ankle sprains, strains, and fractures are commonly encountered. Tibial and fibular fractures make up almost 40% of all skiing fractures. The most common site of fracture has changed from the ankle level to the lower onethird of the tibia due to recent changes in boot design. The "skier's fracture" of the metacarpal is uncommon and constitutes only 1.3% of all skiing fractures. Occasional shoulder injuries including fractures, dislocations, rotator cuff tears, and AC separations are encountered.

Snowmobiling

Although not considered by many to represent a "sport", there is a large participation in this outdoor activity in this portion of the country. The severity of these accidents rival that of the injuries to motorcyclists, and alcohol is a factor in 40%. Fractures of the spine are common followed by the tibia and fibula. Vertical snowmobile falls of two to four feet can generate 20 to 34 g forces on impact with potentially sufficient force to produce compression fractures of the vertebral bodies. Mandibular and maxillary fractures are commonplace.

Soccer

Injury patterns from running and jumping are most like that of basketball. Degenerative calcific spurs, secondary to a traction force exerted in a position of extreme plantar flexion on the anterior dorsal talus, is documented by plain Xray. Running stresses and tackling in a sliding maneuver are causes of symphysis pubis instability, i.e. a weakening of ligamentous support from chronic adductor strain. Avulsion fractures and myositis ossificans occur at adductor muscle attachments on the inferior pubic (ischial) ramus. Tibial stress fracture, osteoarthritis of the hips, vertebral fracture, and blunt trauma to the face and abdomen are included on the list of soccer injuries.

Tennis

The predominantly unilateral use of the upper extremity accounts for the majority of injuries encountered in this sport. "Tennis elbow" or epicondylitis occurs laterally seven times more frequently than medially. X-ray changes include erosion and fragmentation of the lateral epicondyle, calcification of soft tissues, ulnar coronoid spurs and hypertrophy of the humerus. Other injuries are "tennis shoulder" (tendon injury and rotator cuff tear), "tennis leg" (a tear of the musculotendinous junction of the gastrocnemius muscle), and "tennis toe" (subungual hemorrhage). Axillary x-ray view of the shoulder, and a lateral Xray of the calf may be helpful in evaluation of these injuries. Arthrography will help identify a rotator cuff tear.

Wrestling and Weightlifting

Numerous injuries are reported with wrestling, but few have radiologic findings. Wrestling has been reported to be the leader in injury rates among U.S. physical education activities. Approximately 10% of the injuries were fractures (usually ribs or fingers). Rotator cuff injuries from falling on the point of the shoulder are seen. Rupture of hollow or solid viscera may occur. There would appear to be an increased risk of Osgood-Schlatter disease secondary to repeated trauma to the anterior tibial tuberosity.

Weightlifters demonstrate various fractures, sprains, and strains with epiphyseal fractures being noted in the distal radius in adolescents. Muscle tendon ruptures are not uncommon. The weightlifters "black out" may occur following prolonged squatting prior to lifting a large weight. This may be related to cerebral ischemia secondary to decrease in arterial pressure when the elevated intrathoracic pressure during lifting is released. Spondylolysis is seen with increased frequency in weightlifters which leads credence to the theory that these represent stress fractures. Herniated disc has been reported.

Acknowledgment

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Echoes from Our Past

Pearls of Wisdom

JACK D. KEY, M.A., M.S.*

A suitable caution for any researcher/writer is the splendid anecdote concerning Martin Joseph Routh and found in the *Oxford Book of Literary Anecdotes* (1976). This aged gentleman, the President of Magdalen College, Oxford, was interviewed late in his life by J. W. Burgon:

> A full year elapsed before I ventured to repeat the intrusion . . . I ventured to address him somewhat as follows: "Mr. President, give me leave to ask you a question I have sometimes asked of aged persons, but never of any so aged or so learned as yourself." He looked so kindly at me that I thought I might go on. "Every studious man, in the course of a long and thoughtful life, has had occasion to experience the special value of some axiom or precept. Would you mind giving me the benefit of such a word of advice?" He bade me to explain, evidently to gain time. I quoted an instance. He nodded and looked thoughtful. Presently he brightened up and said, "I think, sir, since you care for the advice of an old man, sir, you will find it a very good practice" (here he looked me in the face) "always to verify your references, sir!"

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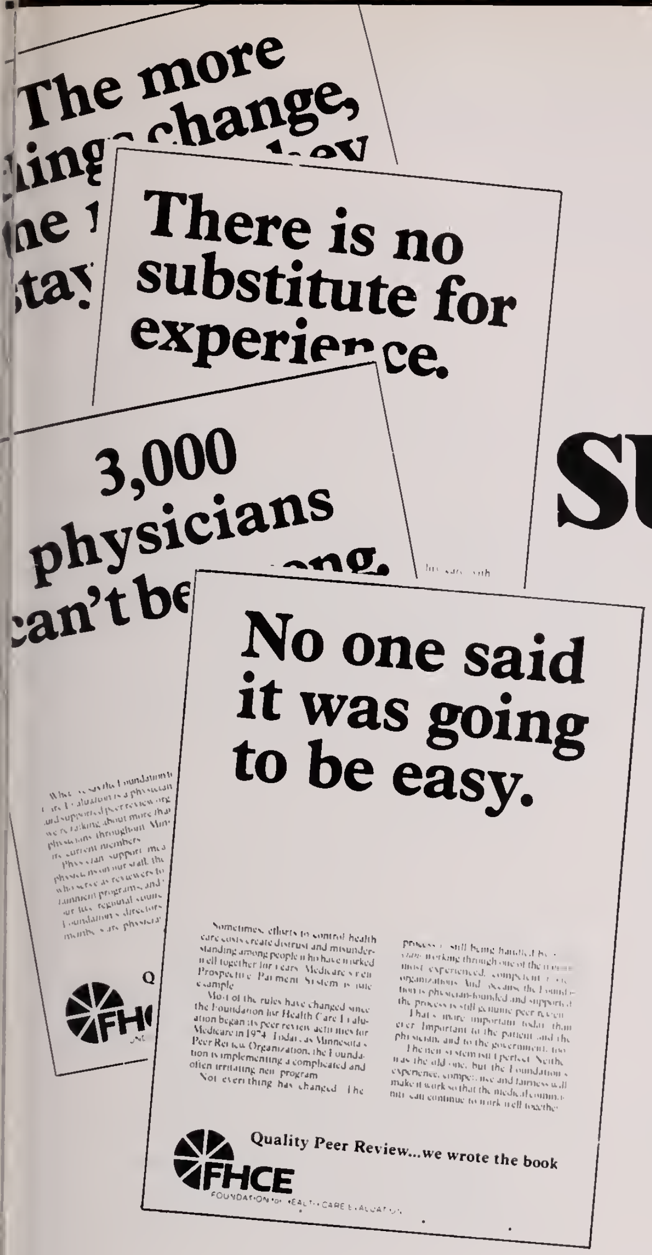
*Librarian, Mayo Clinic, Rochester, Minnesota.



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Looking Back: A Eulogy

S. R. MAXEINER, JR., M.D.*

Stanley R. Maxeiner, M.D., University of Minnesota, 1909. Clinical Professor of Surgery, Emeritus, University of Minnesota Medical School. Member of the Western Surgical Association. 1924 Fellow of the American College of Surgeons. Member of the Founder's Group and Diplomat of the American Board of Surgery (certificate number 139). A founder of the Minneapolis Surgical Society and of the Minneapolis Academy of Medicine. 1969 recipient of the Charles Bolles Bolles-Rogers award (then the St. Barnabas Bowl).

He lives in a nursing home. Maybe he can recognize his family and understand things; we can't tell. He can't say anything. Only unintelligible sounds come out. But he is unfailingly friendly. He loves to take a visitor's hand and kiss it. June 17, 1985 is his 100th anniversary.

He has lived too long to die in any kind of acclaim or public notice. Few of those who knew and loved him in his public life are still around. But he is my father, and for me some memories endure.

About golf: His great pleasure in life outside of surgery. Friends said his portly abdomen was a problem in addressing the ball. If he stood where he could reach it, he couldn't see it, and if he stood where he could see it, he couldn't reach it. But he always played in the low 80s. Typically on a Saturday, after a morning of operations and hospital rounds, he would arrive at the club five minutes before starting time, change clothes, down a glass of Moosemilk (buttermilk and bourbon), and catch his foursome just in time to be the last player off the tee. His ambition was to break 80, and he had it going one day. Even par over the last two holes would do it. The caddy-master's cart took him away for a phone call, and he never made it back.

About church: He always cared, and he always felt what religion is all about. And when he finally retired from surgical duties, he took religious instruction. All on his own, he joined a confirmation class of ninth-graders. He was confirmed in the Episcopal Church at the age of 78.

About courtesy and ethical behavior: Often times when I first started to practice with him, I would hear a physician say: "When I had a patient in trouble, I'd call Stanley. He knew what to do, and he always tried to make me look good."

About teaching: A series of young surgeons at General Hospital and in his own practice learned from him, in the days when preceptorship was the standard for specialty training. For over thirty years he served as attending surgeon at the Minneapolis Veterans' Hospital, before and after it became a teaching institution. He loved to oversee the efforts of younger staff and residents. He taught generations of them the careful disciplines of local anesthesia, and he delighted in their successes. "I never did anything out there that I didn't get back two or three times over."

About CME: For him it wasn't a requirement. It was a continuous romance with the art and science he loved. He gave his affection and respect to those leaders of surgery who shared their knowledge and their special gifts with their colleagues. To me they were the legendary names of surgery; to him they were the good fellows he pondered with at meetings of "the Western" or "the College."

About professional pride: Competition was alive and well in his day, too. "They're not my patients," he would say. "Nobody owns patients. But I'm their doctor." And he would recall with a twinkle the two patients with a relatively rare and dangerous surgical diagnosis who were admitted to his hospital on the same day. "Dr. __________got one," he said, " and I got the other one. His died."

About the art of medicine: "Your father took care of my baby when he was burned." I have heard many stories starting like that. This one was a little different. The usual sequence of a coffee pot on a stove, a toddler, a spill, a scalding terror, and weeks of nightmare. And then the final office visit after healing. My father said "Tell me why you burned your baby." The mother was enraged. "I didn't do it on purpose! It wasn't my fault!" "Ah," he said, smiling, "then I want you to stop feeling guilty." "And you know," she was telling me decades later, "I never did again."

Those of us who are surgeons today are better equipped than he was. We can do things he couldn't do. We can save people he couldn't have saved. But

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*Minneapolis, Minnesota.

I for one have never matched him for hard work, for long hours, for discipline, or for acceptance of travail in the course of events. He was a pioneer, a builder of our surgical heritage, a contributor. Several surgical generations have passed since his era. But we do well to remember men like him who once gave us our vision and our inspiration. I hope we are doing as well.

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Bruce Nydahl, M.D.
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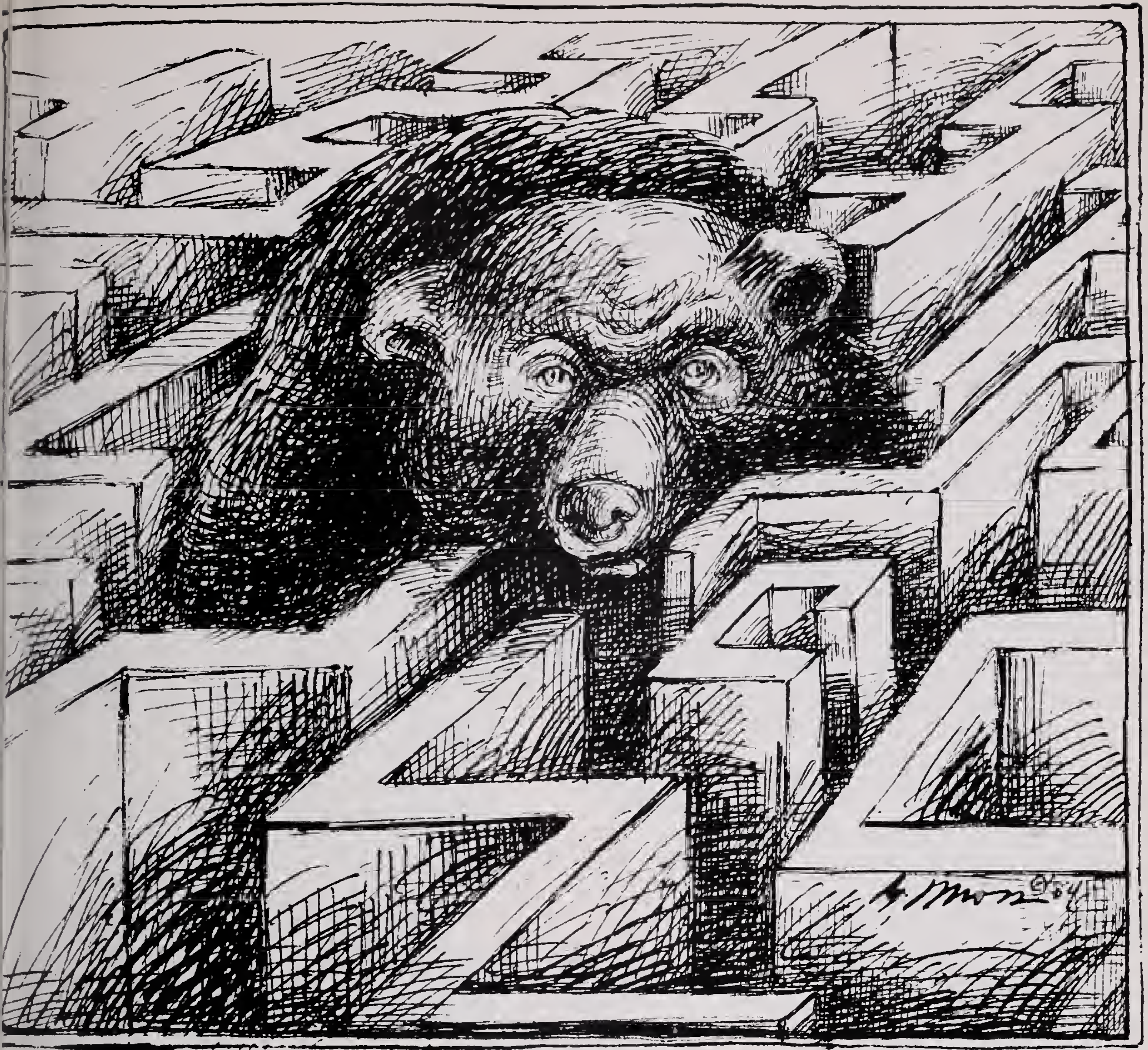

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Peer Review in Minnesota—The Foundation for Health Care Evaluation - 1985

Presidential Address, February, 1985.

RICHARD C. WOELLNER, M.D.*

IN THIS YEAR of problems, our organization has been seen as many different things by many different people. Now is a time to say again what we really are: we are a peer review organization. For the federal part of our business, we are a PRO - a peer review organization - by definition. For the private review half of our business, we gain our credibility by being an organization which does effective "review" by "peers."

I have always been a little confused by the meaning of "peer review," and I took the liberty of looking it up in the dictionary. The first definition of a "peer" is that he is a member of the British nobility qualified to sit in the House of Lords. There may be some who feel that it is what we think we are, but I hope it doesn't really apply. A better definition is the dictionary's second definition: "One of the same rank or quality, an associate or comrade." I think our goal, and that of our peers, is that we are the latter . . . we are comrades in the practice of medicine.

"Review" also has lots of definitions, ranging from a stage production, which I hope we are not, to somewhat better ones - as a verb "to look back on" or "to examine deliberately" or "to re-examine." Thus peer review is looking back on medical care by our comrades. As an organization, our goal is to represent, as best we can, the interest and goals of our comrades in medicine in peer review.

In the development of the Foundation to its present activities, we should look back at how we got to be doing what we are doing now. The Foundation for Health Care Evaluation was formed years ago by the Hennepin County Medical Society with the purpose of having doctors look at the appropriateness of fees which were charged by other doctors. Since then, the Foundation expanded rapidly — geographically, functionally, and in the variety of its clients. Geographically, we expanded from Hennepin County to the metropolitan area to the northern two-thirds of the state, and recently we are representing some of the interests of another organization, PSQCM, for the rest of the state. We have recently expanded our private review service throughout the entire nation. Functionally, we initially served a purpose only of reviewing fees. Later we expanded our services to review the quality of medical care and then to the "efficiency" of medical care - the overall cost per disease. We have greatly expanded the variety of our clients. Initially, our only customer was organized medicine, the Hennepin County Medical Society. Later, on request, we did fee reviews for patients. Since then, we have expanded to deliver our service to other groups: to the government, with the early PSROs (now the PROs), to insurers, and, since 1981, to groups who pay for medical care — employers who pay their employees' medical costs. We are now a large $4 million per year organization with a lot of services delivered to a lot of people. How do we keep "peer review" at the heart of all these services?

As an organization of peers, who and what do we represent? What is our constituency? It is easy to say that our goals in medicine are the "best care of the patient." That is a ringing statement but ends in a morass of definitions from technical to personal to moral. Another goal is to serve the needs of our "consumers." In the past, a consumer of medical care was the patient, all by himself. Now most patients have selected someone else who pays the cost of his medical care - the government, his employer, his insurer, or whoever, and occasionally, still, the patient himself. The patient's interest in selecting who pays for his cost is that they continue to pay this cost; that the care satisfies him; and that the medical care still does not cost him exorbitantly. Whose interests and what interests do we represent in trying to satisfy these various goals?

In a narrow sense, we can be thought of as an organized medical society, representing the parochial interest of doctors. These parochial interests include concerns of competition among doctors and competition with other groups providing medical care; concerns of financial benefits to physicians; concerns of personal interests of physicians; concerns of fulfillment and satisfaction of physicians;

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*President, Foundation for Health Care Evaluation and Internist, Minneapolis.

and concerns of "fairness" or "due process" to physicians.

Another interest is that we maintain the physician's personal relation with his patient and his responsibility for the patient's well-being. We also in our "Quality Assurance" programs may represent protection of technically sound medical care. Finally, and perhaps most importantly, we represent the professional concerns, standards, and goals of physicians.

These professional concerns are those aspects of our occupation responsible to goals above and beyond our own immediate benefits. All of these interests obviously conflict with each other. Part of our function is to balance these conflicting interests.

The Foundation for Health Care Evaluation has grown through the years, and in its growth has had to change its priorities regarding the balance of these interests. We have grown from tending the parochial interest of physicians to a wider constituency including patients and payors. We have grown from looking at purely technical aspects of medical care to analyzing more diverse and widespread quality programs. We have grown in the scope of our services from narrow economic concerns to concerns which include the entire efficiency and effectiveness of medical care. We have grown from a group looking individually at individual fees to a structured and representative organization looking at both individual cases and at large amounts of well-collected and well-analyzed data. With this growth, we as professionals are responsible to our peers to maintain a professional and broad approach in looking at or "reviewing" the medical practice of our peers. We have, in short, a broader constituency.

Let's look for a minute at how we have maintained our responsibilities as a peer review organization. How have we tried to resolve these conflicting interests in our activities over the past year? I would like to select two areas that have occupied much of our efforts and decisions over the past six months or so and see how we have handled these problems in reference to our goals. One is that of the release to employers of the names of physicians who had an increased number of nonacute days - the so called "data release" controversy. The second area is that of the organizational restructuring of the Foundation of Health Care Evaluation.

I would like to look first at the Data Release Program. In 1981, several large employers in the Twin Cities expressed concern about their medical costs. They contracted with the Foundation of Health Care Evaluation to review the efficiency of their employees' medical care. The goals agreed on at that time were to allow the employers to assess the costs of medical care that they were paying for, to help control these costs by recognizing inefficient areas, and to evaluate the quality of that care. The Foundation agreed to work with them for several reasons. Among them, two reasons stand out. The most important reason was to ensure that studies of health care were done in an accurate manner and in accordance with the goals of medicine. This was our most important concern. Another concern, and one which frankly was incidental to the main concern, was to help the medical community evaluate its care of patients by educating doctors about the efficiency of their practice. This was indeed a goal, but I would emphasize that it was not the entire goal of the program which subsequently came to be known as the Private Review Program. We share the concern of many physicians and medical groups about this educational process. Unfortunately, most of our clients — private payors or government — have been unwilling to fund this educational process. We cannot do it ourselves, nor are we the only educational program in the community. Recently, we have initiated a joint task force with the Minnesota Medical Association and the Hennepin and Ramsey County Medical Societies to develop such an educational program.

Later the Private Review Program (currently the MedTrac Corporation) agreed to release some of the detailed data which it had been collecting to the employers who had paid physicians. I would like to go into the process of this in order to illustrate the degree of peer involvement which the Foundation has insisted on as a part of that process. Initially, the Board of the Foundation, primarily composed of physicians, agreed to the concept of Private Review. A Private Review Committee was appointed, consisting both of doctors in practice and of people who represented employers and hospitals. It was agreed that all medical decisions by this committee would be made by the doctors. The process of "nonacute day reviews" was chosen by both the professional quality assurance staff of the Foundation, the representatives of the companies, and the physicians on the Private Review Committee. The review criteria were discussed by the physicians on the committee at that time, and with the help of the Foundation staff the "Gertmann criteria" were adopted, with modifications suggested by physicians. These criteria were initially devised by Dr. Paul Gertmann of Boston University. Data was collected using these criteria over a two-year period by the staff of the Foundation. Frequently, this data collection process involved contact with doctors, by nurses and by reviewing physicians, the peers of those who were being reviewed. After a period of time long enough to obtain significant practice pattern data, the concept of a nonacute day data release was presented to the MedTrac Corporation. The decision was made by the physicians on the corporate board, as well as others, to have the doctors who had an increased number of nonacute days re-reviewed by a subcommittee which consisted entirely of doctors. The subcommittee examined copies of all of the charts involved. These were re-reviewed entirely by doctors in that specialty. After this subsequent peer review, the data was again submitted to the MedTrac Board. It was again presented to the entire Foundation for Health Care Evaluation Board, consisting primarily of doctors. The decision by both of these groups was made to release the names of doctors who had aberrant utilization patterns to the companies involved, but only after these had been discussed with the physicians and after guarantees of confidentiality had been made.

At this time, the Foundation for Health Care Evaluation discussed the proposed data release with a number of groups in organized medicine. The involved doctors were notified and were given an opportunity to review their own records and to meet with their peers, and if they desired, to submit a rebuttal. Many of the involved physicians did so. The point should again be emphasized that no one outside of medicine was involved in this process, and no one, until that time, knew the names of the physicians. Only after discussion with doctors who had been found to have a different practice pattern, and after a mailing to all physicians who had been reviewed, were the names of the involved doctors finally given to the people who paid their fees along with the rebuttal comments from these physicians.

Let us look a little more closely at how "peer review" affected this process.

1. All the criteria and plans were approved in advance by physicians.

2. All the data of physicians who seemed to have a different utilization practice were re-reviewed by another group of doctors - doctors who were actively involved in medical practice in the same specialty area.

3. The decision to release this data was made by two separate groups of physician peers: one appointed group in the MedTrac Board and one elected group, the Foundation Board.

4. All the doctors involved were given an opportunity to review their own records, to meet with their peers, and to submit any disagreement to the peers involved.

5. Strict confidentiality was involved, and at no time were the names of these physicians released to anyone other than the involved employers. The employers additionally signed very rigid guarantees of maintaining confidentiality of this data.

Another example of involvement of our peers in the function of the Foundation for Health Care Evaluation was our proposed re-organization. For a purpose of better governance, the Administrative Committee and the Planning Committee of the Foundation (composed of doctors and Foundation management) wanted to change some of the structure of the Foundation for Health Care Evaluation. Our initial proposal was presented to organized medical groups: Hennepin County Medical Society, Ramsey County Medical Society, Minnesota Medical Association, and representing Southern Minnesota, PSQCM. This was discussed at length with them. On the basis of these discussions and their input and in response to the concerns of our peers, the plans were changed. A modified proposal for restructuring is being considered which ensures a structure which continues to have close physician review of all medical peer review functions.

I would like to discuss the future of the Foundation for Health Care Evaluation and about accomplishing our goals of peer review. We are facing a number of problems now and in the immediate future, primarily in terms of competition and credibility. There is much competition to do review by groups who have much less or even only token peer involvement. There is competition to do medical review by other groups on the basis of economics. They may offer to do it for less cost. There is competition on the basis of efficiency - if less people are involved, the process is more efficient. There is competition on the basis of speed - if review is done in one quick look and no re-review, there is no waiting.

We are facing difficulty in the terms of credibility of the Foundation for Health Care Evalution and its subsidiary, the MedTrac Corporation. We have concerns about our credibility in the physician community. Physicians are concerned about the general process of review. The Foundation for Health Care Evaluation is the very visible cutting edge of the sword of changing times, and we bear the responsibility for many changes over which we have no control. We must provide leadership within this changing environment to enable physicians to face these changes successfully while continuing to provide high quality medical care.

There is physician concern of the credibility of the Foundation itself. Are we really a group of "peers" and "comrades" and are we really professional? We are concerned about our credibility in the eyes of others. Do the purchasers of our service believe that we are honest, or are we in their eyes just defending the status quo and defending the inefficiency of some doctors? For patients, are we a credible organization, assuring them that they have quality care at efficient cost, or are we merely violating their confidence and unjustly denying them medical care? Are we credible in our relationship with hospitals - are we "the bad guys" or are we doing an honest and impartial job of administering Medicare laws? Are we doing it better than the government itself would do it? Are we doing it better than groups who would not be as responsive to our peers?

Why do we, the Foundation, need the support of physicians? If we didn't consider peer review, life would probably be easier. Our cost would be less; we would have no hassle, no delays, and really no concern for the opinion of our peers. We do, however, need widespread physician involvement as a condition of our survival. We need widespread physician involvement to maintain the quality of our reviews. The input of practicing physicians still gives the best review product. We need widespread physician involvement to maintain our professionalism, our objectivity, and our goals. We need widespread physician involvement as a part of our responsibility to all of our peers.

Finally - many other groups want to do what we are doing. Not all of them are looking at the best interests of our patients and our peers. We, as physicians, want to look at the medical practice of our comrades and ourselves. We want to do it well; we want to do it fairly; and we want to keep on doing it. That is our goal, and that is our challenge for the coming year.

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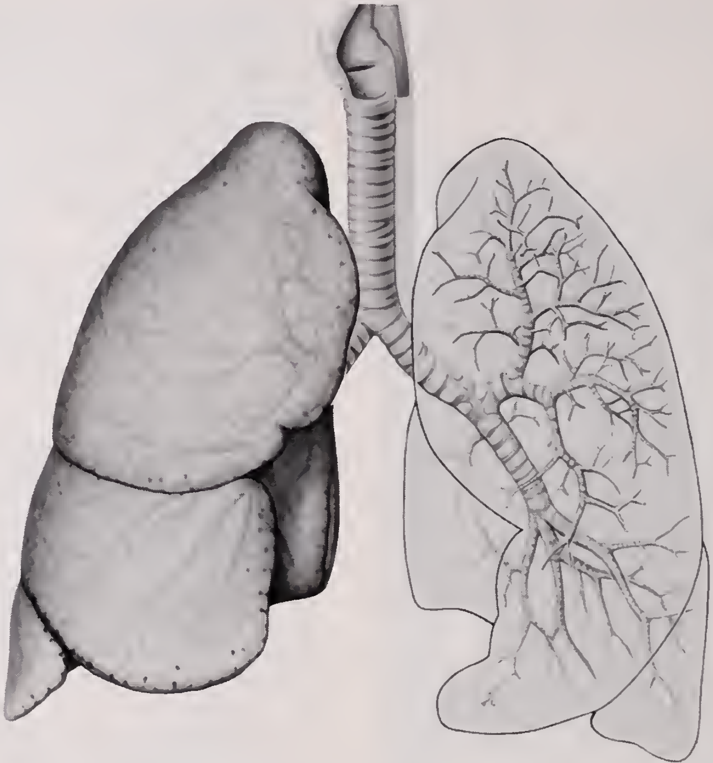

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Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae) Haemophilus influenzae,* and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins), therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by C *difficile* Other causes of colitis should be ruled out

Precautions: *General Precautions* — If an allergic reaction to Ceclor® (cefaclor, Lilly) occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e g, pressor amines, antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy, appropriate measures should be taken

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis

Usage in Pregnancy — Pregnancy Category B — Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor® (cefaclor, Lilly) There are, however, no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed

Nursing Mothers — Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18, 0 20, 0 21, and 0 16 mcg/ml at two, three, four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor is administered to a nursing woman

Usage in Children — Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions: Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vagin
(less than 1 in 100 patients)

Causal Relationship Uncertain — Transitory abnormalitie
clinical laboratory test results have been reported Although
were of uncertain etiology, they are listed below to serve as
alerting information for the physician

Hepatic — Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic — Transient fluctuations in leukocyte cou
predominantly lymphocytosis occurring in infants and young
children (1 in 40)

Renal — Slight elevations in BUN or serum creatinine (less
1 in 500) or abnormal urinalysis (less than 1 in 200)

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Note Ceclor® (cefaclor, Lilly) is contraindicated in patients
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prevention of streptococcal infections, including the prophyl
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Allegation

Negligent failure to diagnose and treat testicular cancer that caused or contributed to a wrongful death.

Facts of Case

The patient presented to Dr. X on September 26, 1979, complaining of Achilles tendon pain, a scrotal mass and decreased stamina. On the patient's history and physical form, which is a long, preprinted form, Dr. X made only a checkmark after "genitalia." He recorded no impression or diagnosis, treatment, or follow-up recommendation.

The patient returned to see Dr. X on September 22, 1980, one year after the initial exam, with a complaint of a two to three-week history of coughing. During the course of Dr. X's examination, he readily observed gynecomastia and a right testicular mass. The patient was immediately hospitalized and diagnosed as having a Stage III testicular carcinoma, with lung metastases. The patient expired approximately 14 months thereafter in spite of surgery and chemotherapy.

Disposition

This case settled shortly before trial for $156,250.

Reason for Settlement

During his deposition, Dr. X admitted that he did not recall what he found at the time of his examination on September 26, 1979. Since there was no documentation of historical data or physical findings, he was unable to rely on his records to refresh his memory.

In spite of a primary complaint of a scrotal mass, no follow-up examination was scheduled.

The plaintiffs were able to provide testimony stating that because of the extent of the patient's disease at the time of diagnosis, it was very probable that the testicular cancer should have been diagnosed in September, 1979, and that had the diagnosis been made, the likelihood of cure would have been considerably greater.

Risk Management Comments

One of the most frequent allegations against physicians is a negligent delay in diagnosis or failure to diagnose. Frequently they involve a failure to diagnose breast, testicular, chest or colon cancers. When such a diagnosis is entertained, even as a remote possibility, the physician should be sure to document findings upon examination and that the patient has been instructed regarding the need for follow-up examinations.

The outcome of many malpractice claims depends on the completeness of the medical record. Physicians who see many patients in a given day rarely can recall specific findings, advice or treatment rendered. Thorough documentation is usually the physician's best defense against his own memory loss when asked to recall specific information one, two or even five years after the date of treatment.

Long, preprinted record forms can be tedious to complete and often ask for irrelevant information. When using such forms, an entry documenting either a positive or negative finding should be made. In malpractice litigation, it is difficult to convince a jury that an unfilled blank on a form means that the question was asked and answered in the negative, or that a portion of the examination was done but was negative.

Because malignancies often cannot be diagnosed on the initial visit, it is important that the physician document historical facts, findings on examinations, the proposed treatment plan, and follow-up evaluation. Also, in the practice of good medicine, it is important for the physician to document the thought process leading to the medical judgment used. Quoting a well-known oncologist, "Yes, it may take a few more minutes, but it may prevent future litigation."

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scribing, see complete prescribing information in SK&F CO. r *PDR*. The following is a brief summary.

VG

g is not indicated for initial therapy of edema or hypertension. ır hypertension requires therapy titrated to the individual. If this ıtion represents the dosage so determined, its use may be ınvenient in patient management. Treatment of hypertension :ma is not static, but must be reevaluated as conditions in tient warrant.

:ations: Concomitant use with other potassium-sparing agents pironolactone or amiloride. Further use in anuria, progressive :patic dysfunction, hyperkalemia. Pre-existing elevated serum Hypersensitivity to either component or other sulfonamide- gs

Do not use potassium supplements, dietary or otherwise, unless ia develops or **dietary intake of potassium is markedly impaired.** entary potassium is needed, potassium tablets should not be rkalemia can occur, and has been associated with cardiac irregu- is more likely in the severely ill, with urine volume less than ay, the elderly and diabetics with suspected or confirmed renal cy. Periodically, serum K$^+$ levels should be determined. If hyper- :velops, substitute a thiazide alone, restrict K$^+$ intake. **Asso- ened QRS complex or arrhythmia requires prompt additional** ıiazides cross the placental barrier and appear in cord blood. gnancy requires weighing anticipated benefits against possible ncluding fetal or neonatal jaundice, thrombocytopenia, other actions seen in adults. Thiazides appear and triamterene may breast milk. If their use is essential, the patient should stop lequate information on use in children is not available. Sensitivity may occur in patients with or without a history of allergy or asthma. Possible exacerbation or activation of systemic lupus ısus has been reported with thiazide diuretics.

ıs: The bioavailability of the hydrochlorothiazide component of s about 50% of the bioavailability of the single entity. Theoreti- ient transferred from the single entities of Dyrenium (triamterene, and hydrochlorothiazide may show an increase in blood pressure :tention. Similarly, it is also possible that the lesser hydro- :ide bioavailability could lead to increased serum potassium levels. :xtensive clinical experience with 'Dyazide' suggests that these have not been commonly observed in clinical practice. Do :rum electrolyte determinations (particularly important in patients xcessively or receiving parenteral fluids, and during concurrent amphotericin B or corticosteroids or corticotropin [ACTH]). 3UN and serum creatinine determinations should be made, in the elderly, diabetics or those with suspected or confirmed fficiency. Cumulative effects of the drug may develop in patients ired renal function. Thiazides should be used with caution in vith impaired hepatic function. They can precipitate coma in vith severe liver disease. Observe regularly for possible blood ;, liver damage, other idiosyncratic reactions. Blood dyscrasias ı reported in patients receiving triamterene, and leukopenia, topenia, agranulocytosis, and aplastic and hemolytic anemia reported with thiazides. Thiazides may cause manifestation of betes mellitus. The effects of oral anticoagulants may be when used concurrently with hydrochlorothiazide; dosage adjust- ıy be necessary. Clinically insignificant reductions in arterial eness to norepinephrine have been reported. Thiazides have also wn to increase the paralyzing effect of nondepolarizing muscle such as tubocurarine. Triamterene is a weak folic acid antagonist. c blood studies in cirrhotics with splenomegaly. Antihypertensive ay be enhanced in post-sympathectomy patients. Use cautiously l patients. Triamterene has been found in renal stones in asso- ith the other usual calculus components. Therefore, 'Dyazide' used with caution in patients with histories of stone formation. :urrences of acute renal failure have been reported in patients on when treated with indomethacin. Therefore, caution is advised in ring nonsteroidal anti-inflammatory agents with 'Dyazide'. The may occur: transient elevated BUN or creatinine or both, hyper- and glycosuria (diabetic insulin requirements may be altered), emia and gout, digitalis intoxication (in hypokalemia), decreasing erve with possible metabolic acidosis. 'Dyazide' interferes with nt measurement of quinidine. Hypokalemia is uncommon with but should it develop, corrective measures should be taken such sium supplementation or increased dietary intake of potassium- ;. Corrective measures should be instituted cautiously and serum m levels determined. Discontinue corrective measures and should laboratory values reveal elevated serum potassium. deficit may occur as well as dilutional hyponatremia. Concurrent chlorpropamide may increase the risk of severe hyponatremia. 3I levels may decrease without signs of thyroid disturbance. Cal- retion is decreased by thiazides. 'Dyazide' should be withdrawn nducting tests for parathyroid function.

may add to or potentiate the action of other antihypertensive

reduce renal clearance of lithium and increase the risk of lithium

Reactions: Muscle cramps, weakness, dizziness, headache, dry naphylaxis, rash, urticaria, photosensitivity, purpura, other dermat- conditions; nausea and vomiting, diarrhea, constipation, other estinal disturbances; postural hypotension (may be aggravated by barbiturates, or narcotics). Necrotizing vasculitis, paresthesias, pancreatitis, xanthopsia and respiratory distress including pneu- and pulmonary edema, transient blurred vision, sialadenitis, and ave occurred with thiazides alone. Triamterene has been found in nes in association with other usual calculus components. Rare ; of acute interstitial nephritis have been reported. Impotence has orted in a few patients on 'Dyazide', although a causal relationship been established.

: 'Dyazide' is supplied as a red and white capsule, in bottles of psules; Single Unit Packages (unit-dose) of 100 (intended for nal use only); in Patient-Pak™ unit-of-use bottles of 100.

L39

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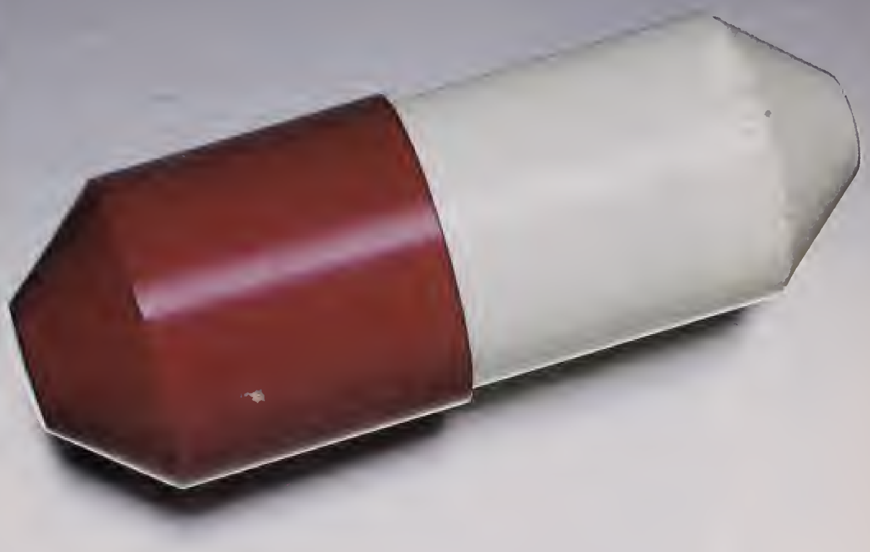

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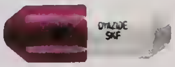

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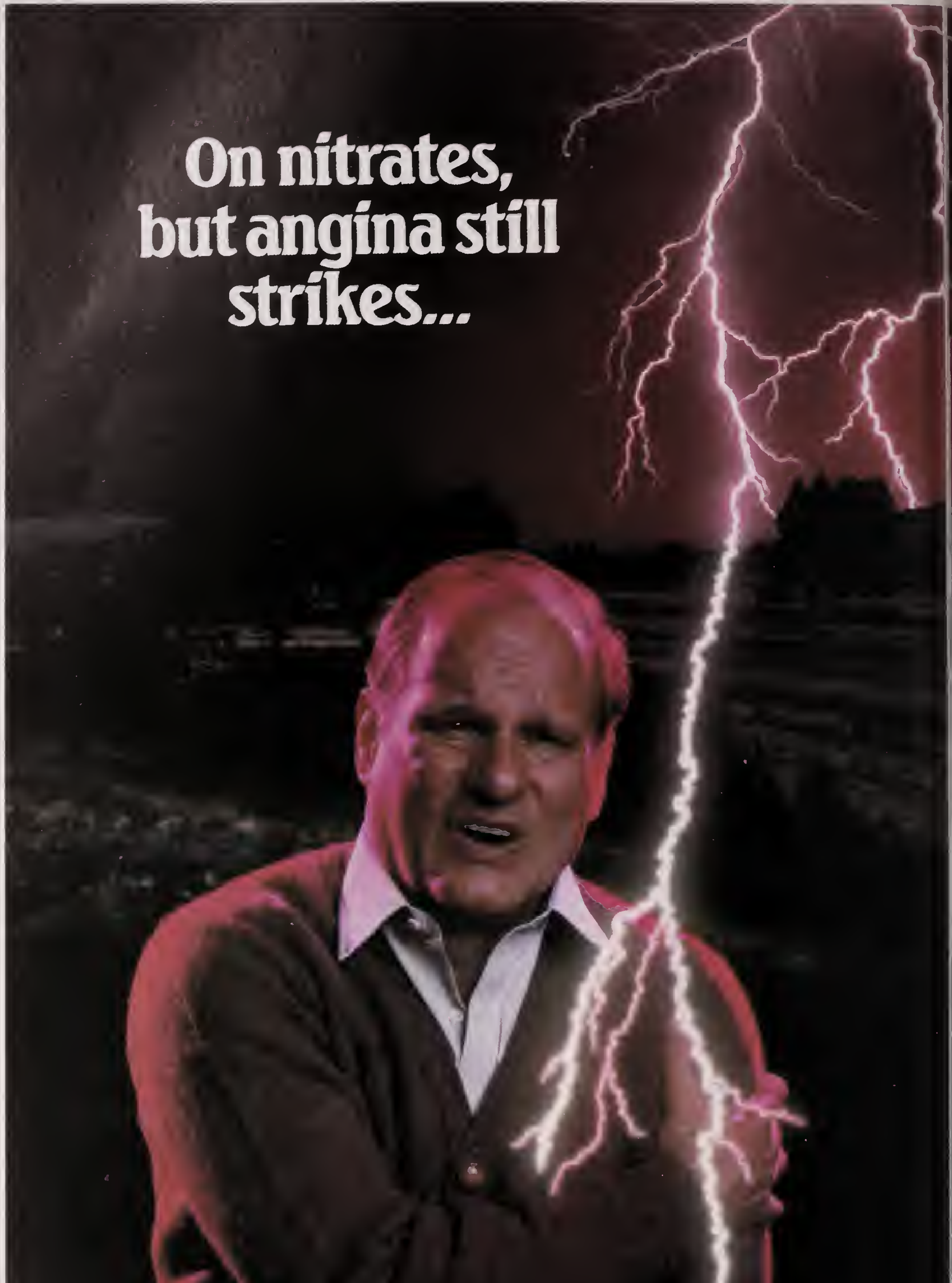
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Cardiovascular contraindications to the use of Isoptin are similar to those of beta blockers: severe left ventricular dysfunction, hypotension (systolic pressure <90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no artificial pacemaker is present) and second- or third-degree AV block.

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ISOPTIN. Added antianginal protection without beta-blocker side effects.

Please see brief summary on following page.

ISOPTIN®
(verapamil HCl/Knoll)
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Contraindications: Severe left ventricular dysfunction (see *Warnings*), hypotension (systolic pressure $<$ 90 mm Hg) or cardiogenic shock, sick sinus syndrome (except in patients with a functioning artificial ventricular pacemaker), 2nd- or 3rd-degree AV block. **Warnings:** ISOPTIN should be avoided in patients with severe left ventricular dysfunction (e.g., ejection fraction $<$ 30% or moderate to severe symptoms of cardiac failure) and in patients with any degree of ventricular dysfunction if they are receiving a beta blocker. (See *Precautions.*) Patients with milder ventricular dysfunction should, if possible, be controlled with optimum doses of digitalis and/or diuretics before ISOPTIN is used (Note interactions with digoxin under *Precautions.*) ISOPTIN may occasionally produce hypotension (usually asymptomatic, orthostatic, mild and controlled by decrease in ISOPTIN dose). Elevations of transaminases with and without concomitant elevations in alkaline phosphatase and bilirubin have been reported. Such elevations may disappear even with continued treatment; however, four cases of hepatocellular injury by verapamil have been proven by rechallenge. Periodic monitoring of liver function is prudent during verapamil therapy Patients with atrial flutter or fibrillation and an accessory AV pathway (e.g. W-P-W or L-G-L syndromes) may develop increased antegrade conduction across the aberrant pathway bypassing the AV node, producing a very rapid ventricular response after receiving ISOPTIN (or digitalis). Treatment is usually D.C.-cardioversion, which has been used safely and effectively after ISOPTIN. Because of verapamil's effect on AV conduction and the SA node, 1° AV block and transient bradycardia may occur. High grade block, however, has been infrequently observed. Marked 1° or progressive 2° or 3° AV block requires a dosage reduction or, rarely, discontinuation and institution of appropriate therapy depending upon the clinical situation. Patients with hypertrophic cardiomyopathy (IHSS) received verapamil in doses up to 720 mg/day It must be appreciated that this group of patients had a serious disease with a high mortality rate and that most were refractory or intolerant to propranolol. A variety of serious adverse effects were seen in this group of patients including sinus bradycardia, 2° AV block, sinus arrest, pulmonary edema and/or severe hypotension. Most adverse effects responded well to dose reduction and only rarely was verapamil discontinued. **Precautions:** ISOPTIN should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of excessive pharmacologic effects. Studies in a small number of patients suggest that concomitant use of ISOPTIN and beta blockers may be beneficial in patients with chronic stable angina. Combined therapy can also have adverse effects on cardiac function. Therefore, until further studies are completed, ISOPTIN should be used alone, if possible. If combined therapy is used, close surveillance of vital signs and clinical status should be carried out. Combined therapy with ISOPTIN and propranolol should usually be avoided in patients with AV conduction abnormalities and/or depressed left ventricular function. Chronic ISOPTIN treatment increases serum digoxin levels by 50% to 70% during the first week of therapy, which can result in digitalis toxicity. The digoxin dose should be reduced when ISOPTIN is given, and the patients should be carefully monitored to avoid over- or under-digitalization. ISOPTIN may have an additive effect on lowering blood pressure in patients receiving oral antihypertensive agents. Disopyramide should not be given within 48 hours before or 24 hours after ISOPTIN administration. Until further data are obtained, combined ISOPTIN and quinidine therapy in patients with hypertrophic cardiomyopathy should probably be avoided, since significant hypotension may result. Clinical experience with the concomitant use of ISOPTIN and short- and long-acting nitrates suggest beneficial interaction without undesirable drug interactions. Adequate animal carcinogenicity studies have not been performed One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. *Pregnancy Category C:* There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor and delivery only if clearly needed. It is not known whether verapamil is excreted in breast milk; therefore, nursing should be discontinued during ISOPTIN use. **Adverse Reactions:** Hypotension (2.9%), peripheral edema (1.7%), AV block: 3rd degree (0.8%), bradycardia: HR $<$ 50/min (1.1%), CHF or pulmonary edema (0.9%), dizziness (3.6%), headache (1.8%), fatigue (1.1%), constipation (6.3%), nausea (1.6%), elevations of liver enzymes have been reported (See *Warnings.*) The following reactions, reported in less than 0.5%, occurred under circumstances where a causal relationship is not certain: ecchymosis, bruising, gynecomastia, psychotic symptoms, confusion, paresthesia, insomnia, somnolence, equilibrium disorder, blurred vision, syncope, muscle cramp, shakiness, claudication, hair loss, macules, spotty menstruation. **How Supplied:** ISOPTIN (verapamil HCl) is supplied in round, scored, film-coated tablets containing either 80 mg or 120 mg of verapamil hydrochloride and embossed with "ISOPTIN 80" or "ISOPTIN 120" on one side and with "KNOLL" on the reverse side. Revised August, 1984 2385

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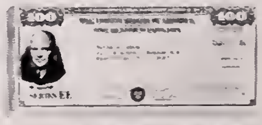

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Hearing Screening

The Minnesota Department of Health has revised its manual and recommendations for preschool and school-age hearing screening.

These hearing screening recommendations were reviewed and approved by a twelve-member committee representing: Minnesota Academy of Otolaryngology/HNS, Minnesota Academy of Pediatrics, Minnesota Academy of Family Physicians, Subcommittee on Screening — Minnesota Medical Association, Audiology — Mayo Clinic, Minnesota Speech-Language-Hearing Association, Public Health Nursing, School Nursing, Special Education — Minnesota Department of Education, and the Hearing Conservation Committee — Minnesota Academy of Otolaryngology.

The recommendations are:

1. Screening at 25 dB at 500 Hz, and 20 dB at 1000, 2000 and 4000 Hz. When tympanometry is used, 500 Hz may be omitted (refer to Tympanometry Recommendations for Screening, Minnesota Department of Health and Minnesota Department of Education).
2. A referral for medical/audiological evaluation is recommended for any child whose threshold in either ear on rescreening is 25 dB or poorer at 500 Hz or 4000 Hz, or 20 dB or poorer at 1000 Hz or 2000 Hz.
3. When the only frequency that meets referral criteria is 4000 Hz, the following options should be given to the parent/guardian: medical referral; audiological evaluation; counseling on hearing protection; and/or monitoring the loss every six months. Medical referral or audiological evaluation is encouraged if there is a 10 dB worsening of the threshold on monitoring audiograms.

Copies of the *Preschool and School Hearing Screening Manual,* as well as copies of *Tympanometry Recommendations for Screening* maybe requested from the Hearing and Vision Conservation program, Minnesota Department of Health, 717 Delaware Street S.E., P.O. Box 9441, Minneapolis, MN 55440, or by calling (612) 623-5288.

St. Paul Ramsey—Medical Center

Management of Common Psychiatric Problems in Primary Care

June 21-23, 1985 — Breezy Point Resort, Brainerd, Minnesota

Content will focus on newer approaches in the diagnosis and management of psychiatric problems commonly encountered by primary care physicians. Educational format will include lectures, informal discussions, video tape sessions, and "hands on" participation in an interactive computer-assisted program.

A variety of recreational and sporting activities including golf, tennis, swimming, boating, fishing and horseback riding will be available during leisure time, with many points of interest nearby.

Sponsors: Department of Psychiatry and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: 10½ AMA Category I hours, 10½ AAFP prescribed hours

Registration Fee: $190 for those staying at Breezy Point; $230 for commuters

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

Second Annual St. Paul-Ramsey Trauma Conference (fishing and family recreation)

August 1-4, 1985 — Fox Hills Resort, Mishicot, Wisconsin (Lake Michigan)

This program will combine a high quality educational program with summertime leisure activities on Lake Michigan. The educational component is designed to update physicians on current procedures for initial assessment and appropriate management of adult and pediatric trauma injuries. Time will be set aside for informal learning through discussion and videotape sessions.

In addition to recreational and sporting activities at the resort, charter fishing will be available on Lake Michigan.

Sponsors: Burn Center and Continuing Medical Education, St. Paul-Ramsey Medical Center, St. Paul, Minnesota

Accreditation: AMA Category I, AAFP prescribed hours

Information & Registration: ATTN: Bonnie Young, Continuing Medical Education, St. Paul-Ramsey Medical Center, 640 Jackson Street, St. Paul, Minnesota 55101, (612) 221-3977.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings*, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

UNE, 1985

, 12, 13 **Basic Life Support (CPR) Course;** Methodist Hospital; . Louis Park; CONTACT: Mary Ann Kempcke, Methodist Hospital, 00 Excelsior Blvd., St. Louis Park, Minneapolis, MN 55426; 932-5162.

3-14 **Institutional Approaches to Bio-Medical Ethical Decision aking;** St. Cloud Veterans Administration Medical Center; Holiday n, St. Cloud; CONTACT: Sharron Erickson, VAMC, St. Cloud, N 56301; 612/252-1670-Ext. 404.

4 **Performance Psychology: At the Peak of Excellence;** University MN-Duluth, School of Medicine; Radisson Hotel Duluth; CONTACT: n DeRoche, Symposium Coor., University of MN-Duluth, School of edicine, 10 University Dr., Duluth, MN 55812; 218/726-7916.

4-15 **Hospital Nutrition Support;** University of Minnesota, ME; Radisson University Hotel, Minneapolis; CONTACT: University of innesota, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Min- apolis, MN 55455; 612/373-8012.

0-22 **Behavioral Pediatrics;** University of Minnesota, CME; rle Brown Center, University of MN, St. Paul; CONTACT: University MN, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Min- apolis, MN 55455; 612/373-8012

1-23 **Management of Common Psychiatric Problems in Primary are;** Dept. of Psychiatry & CME, St. Paul-Ramsey Medical Center, St. ul; Breezy Point Resort, Brainerd; CONTACT: Bonnie Young, CME, . Paul-Ramsey Medical Center, 640 Jackson St., St. Paul, MN 55101; 12/221-3977.

4-26 **Breast and Endocrine Surgery;** University of MN Medical hool, Department of Surgery; Willey Hall, University of Minnesota, inneapolis; CONTACT: University of MN, Office of CME, Box 293 ayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

4-28 **Advanced Cardiac Life Support (ACLS);** Methodist Hos- tal; St. Louis Park, MN; CONTACT: Joan Peterson, RN, Methodist ospital, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 12/932-5419.

5-26 **Advanced Cardiac Life Support Course;** North Memorial ME; Robbinsdale; CONTACT: G. Patrick Lilja, M.D., North Memorial ledical Center; 3300 Oakdale North, Robbinsdale, MN 55422; 520-5535.

7 **Neonatal Resuscitation Course;** North Memorial Medical Center, ME; Robbinsdale, MN; CONTACT: Peter Marshall, M.D., 3300 Oak- ale North, Robbinsdale, MN 55422; 520-5200.

ULY, 1985

0-13 **Orthopaedic Surgery: Spine;** Univ. of MN, CME; Hyatt egency Hotel, Minneapolis; CONTACT: University of Minnesota, Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

17-18 **Human Aging;** University of MN, CME; Willey Hall, Univ. of MN, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St., SE, Minneapolis, MN 55455; 612/373-8012.

18-19 **Elder Abuse Prevention and Intervention Policy, A Working Conference;** Region V Administration on Aging, Region V Training and Education Consortium, Illinois Department on Aging, Minnesota Board on Aging and Michigan Office of Services to Aging; American Congress Hotel, Chicago, Illinois; CONTACT: Department of Health and Human Services, Regional Office V, 300 South Wacker Drive, Chicago, IL 60606.

AUGUST, 1985

1-4 **Second Annual St. Paul-Ramsey Trauma Conference;** St. Paul-Ramsey Medical Center; CONTACT: Ruth K. McIntyre, 640 Jackson St., St. Paul, MN 55101; 612/221-3980.

21-23 **Brain Tumors in Children;** University of MN, CME; Radisson University Hotel, Minneapolis; CONTACT: University of MN; Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

26-27 **Basic Life Support (CPR) Course Certification/ Recertification;** Methodist Hospital; St. Louis Park, MN; CONTACT: Lisa Collins, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, Minneapolis 55426; 612/932-5189.

27-29 **Advanced Cardiac Life Support Course;** North Memorial Medical Center, CME; Robbinsdale, MN; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535.

An Expert System Approach to Fluid, Electrolyte, and Acid-Base Balance; Cyberlog, The Quarterly Applied Medical Software (April, 1985); Cardinal Health Systems, Inc; CONTACT: Suzanne Yotti, Director of Marketing, Cardinal Health Systems, Inc., 7562 Market Place Drive, Eden Prairie, MN 55344-3636; 612/941-5170.

SEPTEMBER, 1985

9-20 **Third Annual Grad. Occupational Health & Safety Institute;** School of Public Health & Office of CME; Continuing Education and Extension, University of Minnesota; and Midwest Center for Occupational Health and Safety; Earle Brown Center, University of MN, St. Paul; CONTACT: Ruth K. McIntyre, Director, Continuing Education, Occupational Health, St. Paul-Ramsey Medical Center, St. Paul, MN; 612/221-3992.

12-21 **Advanced Cardiac Life Support (ACLS) Certification/ Recertification;** Methodist Hospital; St. Louis Park, MN; CONTACT:

(September continued)

Joan Peterson, RN, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5419.

14 **A Workshop in Practical Cardiology;** Mayo Clinic/Mayo Foundation; Marriot's Lincolnshire Resort, Lincolnshire, IL; CONTACT: William L. Neitz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

19-21 **Pulmonary and TB Update;** St. Paul Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

19-21 **Challenge of the Lumbar Spine;** Abbott Northwestern Hospital; Amfac Hotel, Minneapolis; CONTACT: Charles Burton, M.D., 2727 Chicago Avenue, Minneapolis, MN 55407; 612/874-4470.

27 **Northwestern Pediatric Society Annual Meeting;** Northwestern Pediatric Society; Thunderbird Motel, Bloomington; CONTACT: James G. Cardle, M.D., 7250 France Ave. So., Edina, MN 55435; 612/831-4454.

27-29 **Minnesota Society of Neurological Sciences Annual Meeting;** Minnesota Society of Neurological Sciences; St. Paul Hotel; CONTACT: David G. Piepgras, M.D., Mayo Clinic, Dept. of Neurosurgery, Rochester, MN 55905; 507/284-3331.

OCTOBER, 1985

12 **Symposium on Psychiatric Issues; Abbott-Northwestern Hospital;** Radisson South Hotel; CONTACT: Sally Ventres, Abbott-Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

17-18 **Practical Toxicology: Health Concerns & Legal Issues in the Workplace;** St. Paul Ramsey Medical Center; Earle Brown Continuing Education Center, St. Paul; CONTACT: Ruth K. McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

25-26 **Practical Gastroenterology;** Abbott-Northwestern Hospital, Education Building; CONTACT: Sally Ventres, Ed. Dept., Abbott-Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

31-November 1 **Latest Trends in Patient Management-Radiology and Urology;** St. Paul-Ramsey Medical Center; Radisso Plaza Hotel; CONTACT: Ruth K. McIntyre, St. Paul-Ramsey Medic Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

NOVEMBER, 1985

14-16 **Annual Primary Care Medicine Update;** St. Paul-Ramse Medical Center; Radisson Plaza Hotel; CONTACT: Ruth McIntyre St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, M 55101; 612/221-3980.

22-23 **Minnesota Chapter of American College of Physicians** Hyatt Regency Hotel; CONTACT: A. Schultz, M.D., Governor fo MN Chapter, Hennepin County Medical Center, Minneapolis, MN 612/347-2700.

DECEMBER, 1985

2-3 **Basic Life Support Course (CPR) Certification/Recertification** Methodist Hospital, St. Louis Park; CONTACT: Lisa Collins, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612 932-5189.

2-4 **Advanced Cardiac Life Support Course;** North Memorial CME Robbinsdale, MN; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdal North, Robbinsdale, MN 55422; 612/520-5535.
5 Neonatal Resuscitation Course; North Memorial Medical Center CME; Robbinsdale, MN; CONTACT: Peter Marshall, M.D., 330 Oakdale North, Robbinsdale, MN 55422; 612/520-5200.

5 **Neonatal Resuscitation Course;** North Memorial Medical Center CME; Robbinsdale, MN; CONTACT: Peter Marshall, M.D., 330 Oakdale North, Robbinsdale, MN 55422; 612/520-5200.

5-7 **Coronary Heart Disease;** St. Paul-Ramsey Medical Center Sheraton Midway Hotel; CONTACT: Ruth K. McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612 221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

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Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400, Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

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OPHTHALMOLOGIST, NEUROLOGIST — Otolaryngologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

FAMILY PRACTICE — A progressive community located in scenic northern Wisconsin offers a variety of recreational and practice opportunities. A family practitioner is definitely needed, and we offer financial backing and guarantees. Our area provides an excellent education system for your family. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

WANTED: Family practitioner to join a 5 physician partnership in Litchfield, MN (a pleasant town of 6000 located 70 miles west of Minneapolis). If interested, please write or call collect at (612) 693-2804, Daniel A. Johnson, M.D., 35 E. 4th St., Litchfield, MN 55355.

FAMILY PRACTITIONER for Mankato Clinic satellite office. Excellent group practice opportunity in all-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R. F. Roskens, Administrator or B. C. McGregor, M.D. (507) 625-1811.

EAST RANGE CLINICS, Ltd. seeks physicians in the following specialties: obstetrics/gynecology, orthopaedic surgery, and ophthalmology. Opportunity to enter established practice with progressive multi-specialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

THE BEMIDJI CLINIC is a 21 doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Opportunities available: Board Certified or Board Eligible Ophthalmologist, Board Certified or Board Eligible Internist with subspecialty training, Board Certified or Board Eligible Family Practitioners to expand our Family Practice Department and offer opportunity of Branch Office practice. Contact C.C Lowery, Clinic Administrator at (218) 751-1280, home (218) 751-9718 or Jerry Thompson, M.D. (218) 751-1280, home (218) 751-9437.

PEDIATRICS AND FAMILY PRACTICE positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PHYSICIAN — Four man Family Practice group needs to replace leaving partner. Opening for July to September beginning. Board eligible or certified desired. One year salary with partnership thereafter. Small town in Central Minnesota Lakes area. Unopposed Family Practice Clinic, 150 bed Regional Hospital at Brainerd, 100 bed Nursing Home, rotate calls. Call or write C.R. Pelzl, M.D., Pine River Medical Clinic, Pine River, MN (218) 587-4416.

PEDIATRICIAN — Growing pediatric practice with 5 pediatricians and 3 PNPs seeks BC/BE pediatrician to join stimulating private practice with good in/out patient mix and University ties. Reply to Dale T. Dobrin, M.D., 17705 Hutchins Drive, Minnetonka, Minnesota 55345.

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Physician opportunities available in suburban area near Minneapolis/St. Paul for family practice, pediatrician, OB/GYN. Hospital emergency room coverage available. Solo or group practice. Large service area with beautiful communities, lakes, recreation. Write Minnesota Medicine (740) 2221 University Ave. S.E., Minneapolis, MN 55414.

Family physician needed for a 5-physician group in a growing suburb in the metropolitan area, offering amenities of both cosmopolitan and rural life-style. Very competitive compensation and benefits. Contact Jeff R. Michell, M.D. or Gloria Vierling, Business Manager at 612-445-6440 in SHAKOPEE, MINNESOTA 55379.

One or two family physicians needed immediately in rural Minnesota community on I-94 Competitive salary guarantee. Send resume to Minnesota Medicine, (754) 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414.

Family practitioner needed to join 2 FP's at the Ellsworth, Wisconsin office of a progressive eleven physician group. Liberal fringes and financial package. Forty miles from metropolitan Minneapolis/St. Paul. Contact R. M. Hammer, M.D., River Falls, WI 54022. Phone (715) 425-6701 or (612) 436-8809.

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Family practice opportunities — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

Internist — BC/BE internist needed to join four internists in multispecialty group in NE Wisconsin. Competitive salary and benefits. Both subspecialty and general medicine inquiries welcome. Send C.V. to Neil Binkley, M.D., 1510 Main Street, Marinette, Wisconsin 54143 Phone: 715-735-7421.

Twelve-physician multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

Family physician: Immediate opening for a Family Physician to join a 23-physician multispecialty group in St. Cloud, Minnesota. This opportunity affords a Family Practice Physician a great financial and working opportunity. St. Cloud is one of the fastest growing communities in the State of Minnesota and is home to three major colleges. It is geographically located to provide quick access to the Metropolitan Twin Cities area. The St. Cloud Community has excellent school systems available to the individual physician and their family members. The St. Cloud area provides a quality recreational and cultural setting for the Physician to enjoy as the result of a fine call schedule associated with this opportunity. If interested in this excellent opportunity, please call collect either Dr. LaRue Dahlquist, President, and/or Daryl Mathews, Administrator, at (612) 251-8181 or send curriculum vitae to: St. Cloud Medical Group, 1301 West St. Germain Street, St. Cloud, Minnesota, 56301.

Family practice oriented multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

Family practitioner – Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

Ob/gyn — Central Minnesota — Progressive, 9000 member staff-model HMO seeks a second OB/GYN for its family-practice based staff. Should be board certified or eligible and sensitive to women's issues. Excellent working environment with competitive compensation. College community located 70 miles from Minneapolis/St. Paul. Contact Deborah McCarl, M.D., 1245 15th Street North, St. Cloud, MN 56301, (612) 253-5220.

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OB/GYN, AND INTERNAL MEDICINE Board Certified or Eligible, to join eight doctor clinic in Cloquet, Minnesota, a community of 12,000 (30,000 service area) located 20 minutes from Duluth — Superior. Clinic facility is located one block from modern, well equipped hospital. Cloquet enjoys a stable economy (forest products). Additionally, our community is noted for its excellent school system. First year salary guaranteed, paid malpractice, health and disability insurance, vacation and study time. Contact John Turonie, Administrator, Raiter Clinic, Ltd., 417 Skyline Boulevard, Cloquet, Mn. 55720. Telephone 218-879-1271.

ANESTHESIOLOGIST NEEDED — Opportunity at new ENT/Eye Ambulatory Surgery Center to open in Fall, 1985. Please direct inquires to James P. Brown, M.D., 240 Lowry Medical Building, St. Paul, MN 55102, (612) 227-6634.

FAMILY PRACTITIONER. Marshfield Clinic Department of Family Medicine is seeking a BE/BC Family Practitioner for a new position. The physician joining the Clinic's expanding 5 member department will enjoy the support of one of the nation's largest multispecialty groups, share the philosophy of family oriented care with a preventive focus, and enjoy full hospital privileges but without the distraction of OB or surgical responsibilities. Marshfield Clinic offers an excellent salary plus extensive fringe benefits. Please sent curriculum vitae and the names of several references to: E. Grady Mills, M.D., Family Medicine Department Chairman; Marshfield Clinic, Marshfield, WI 54449 or call collect at (715) 387-5168.

VERSATILE SURGEON wanted to complement aggressive family practice group in rural northeastern Minnesota resort community. Well equipped 40 bed hospital with proven surgical practice volume. Outstanding outdoor recreational opportunities with time off to enjoy it. Reply with CV to E. Johnson, Ely Medical Center, Ltd. 224 East Chapman Street, Ely, MN 55731. Telephone: 218-365-3151.

SOUTHERN CALIFORNIA — Prestigious HMO is seeking experienced specialists and general practitioners for our facilities in Los Angeles and Orange Counties. Located in close proximity to major teaching centers, we offer the opportunity for continued professional development and rewarding clincial practice. Excellent compensation and benefits including paid malpractice, life, disability, medical and dental coverage, paid vacations, sick leave, educational leave and retirement plan. Please send c.v. to: Director/Physician Recruitment, CIGNA Healthplans of California, 700 N. Brand Blvd., Suite 500-33, Glendale, CA 91203.

MEDICAL DIRECTOR, HACKLEY HOSPITAL, MUSKOGON, MICHIGAN, Hackley Hospital, 361 bed general hospital, is seeking a Medical Director for Northwood Center, the hospital's 48 bed inpatient psychiatric unit. Candidates should be board certified, possess strong leadership skills and a commitment to multidisciplinary treatment. The Medical Director position is a part-time position, allowing the Medical Director to develop a strong independent practice. Excellent financial potential and ready access to boating, fishing and hunting. For immediate and confidential consideration, please write: Gerald O'Keefe, Ph.D., Horizon Health Management Company, 1100 Jorie Blvd., Suite 230, Oak Brook, IL 60521.

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(continued on page 486)

Excellent Opportunity to join well established practice of three consulting internists in Mankato, Minnesota. One internist will be retiring on June 30, 1985. Guaranteed first year salary plus full partnership in corporation after one year. Office located three blocks from 272-bed hospital. Mankato has a population of 40,000, including university students. Contact Billie Seifert, Office Manager, 304 Belle Avenue, Mankato, Minnesota 56001, (507) 388-1655.

Ob/gyn — Excellent opportunity to join five OB/Gyns in presitigious 119-member multispecialty clinic. Opening due to retirement of one of the physicians. Salary commensurate with experience, plus incentive. Excellent benefits. City of 100,000 in northeastern Minnesota. Excellent recreational facilities. Minnesota Medicine (756), 2221 University Avenue S.E., #400, Minneapolis, MN 55414.

Suburban F.P. Group - SHARE affiliate - seeks associate to service rapid practice growth - competitive salary and benefits - unique opportunity to establish your practice - contact Gloria M. Vierling, Sundance Medical Clinics, LTD., 323 Naumkeag St., P.O. Box 9, Shakopee, MN 55379, (612) 445-6440.

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Medical equipment for sale: F.P. closing office. Lab., 200 MA X-ray, hand instruments, furniture, medical and office supplies. Good condition. Roger Grimm, M.D. 6401 Eagle Lk. Dr., Minneapolis, MN 55369, (612) 536-9503.

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Arizona Based Physician Recruitment firm has opportunities coast to coast. "Professionals working with Professionals." Over 13 years experience. Call (602) 795-7474; or send CV to: Mitchell & Associates, Inc., 2761 N. Country Club Rd., Suite 202, Tucson, AZ 85716.

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Gastroenterologist or Internist with subspecialty interest in gastroenterology (have all the equipment). Obstetrician/Gynecologist, General Surgeon, Internist, Family Practice in 18 physician multispecialty group located in ideal community of 26,000. Ninety minutes from Twin Cities, excellent schools, etc. The clinic is a modern, well equipped facility providing attractive guarantee and early partnership, plus other excellent benefits. Contact Richard W. Golly, Austin Medical Clinic, P.A., 101 N.W. 14th Street, Austin, MN 55912, (507) 433-7351.

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Board Eligible Anesthesiologist /Medical Director opportunity available mid summer at an established twin cities outpatient surgery center. Full time, M-F, no call, business hours. Excellent billings potential in an affluent community. Excellent CRNA, RN staff and administrative organization. Confidential, direct inquiries to Samuel C. Shield, Minnesota Medical Services Corporation, 2221 University Ave. S.E., Minneapolis, MN 55414, (612) 378-0305.

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Family physicians, ophthalmologist, orthopedist needed to join 30 physicians of the Olmsted Medical Group of Rochester. Opportunities available in main office and satellites. Exceptional salary and benefit package provided in a choice professional and cultural community. Contact James E. Hartfield, M.D., Medical Director, 210 Ninth Street SE, Rochester, MN 55903 (507-288-3443).

Office space for rent: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

Practice opportunity. Assume Minneapolis-suburban very active practice. Family practice or internal medicine emphasis. Low investment. Write: Minnesota Medicine (748) 2221 University Ave. SE. #400, Minneapolis, 55414.

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Associate Needed for very busy Family and Occupational Practice located in northwest Missouri. Guaranteed minimum compensation plus substantial incentives and benefits. Excellent potential for equity position for the right individual. Considerable growth and expansion opportunity. Career-oriented physicians send resumes to Health Innovators, 8550 N.W. 48th Street, Fort Lauderdale, Florida 33321. (305) 748-9100.

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OB/GYN–Expanding needs: position open in Cambridge, Minnesota for OB/GYN, board eligible, board certified, to join a multispecialty practice with one existing OB/GYN physician. Excellent opportunity to rapidly develop a rewarding practice within a pleasant urban/rural setting just one hour from downtown Minneapolis/St. Paul. Brand new 85-bed full service and acute care hospital. Contact Administrator Al Nelson at 612/689-1411, or home phone 612/396-2504.

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References: **1.** Kales J *et al*: *Clin Pharmacol Ther 12*:691-697, Jul-Aug 1971. **2.** Kales A *et al*: *Clin Pharmacol Ther 18*:356-363, Sep 1975. **3.** Kales A *et al*: *Clin Pharmacol Ther 19*:576-583, May 1976. **4.** Kales A *et al*: *Clin Pharmacol Ther 32*:781-788, Dec 1982. **5.** Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc 27*:541-546, Dec 1979. **6.** Kales A, Kales JD: *J Clin Pharmacol 3*:140-150, Apr 1983. **7.** Greenblatt DJ, Allen MD, Shader RI: *Clin Pharmacol Ther 21*:355-361, Mar 1977. **8.** Zimmerman AM: *Curr Ther Res 13*:18-22, Jan 1971. **9.** Amrein R *et al*: *Drugs Exp Clin Res 9*(1):85-99, 1983. **10.** Monti JM: *Methods Find Exp Clin Pharmacol 3*:303-326, May 1981. **11.** Greenblatt DJ *et al*: *Sleep 5*(Suppl 1):S18-S27, 1982. **12.** Kales A *et al*: *Pharmacology 26*:121-137, 1983.

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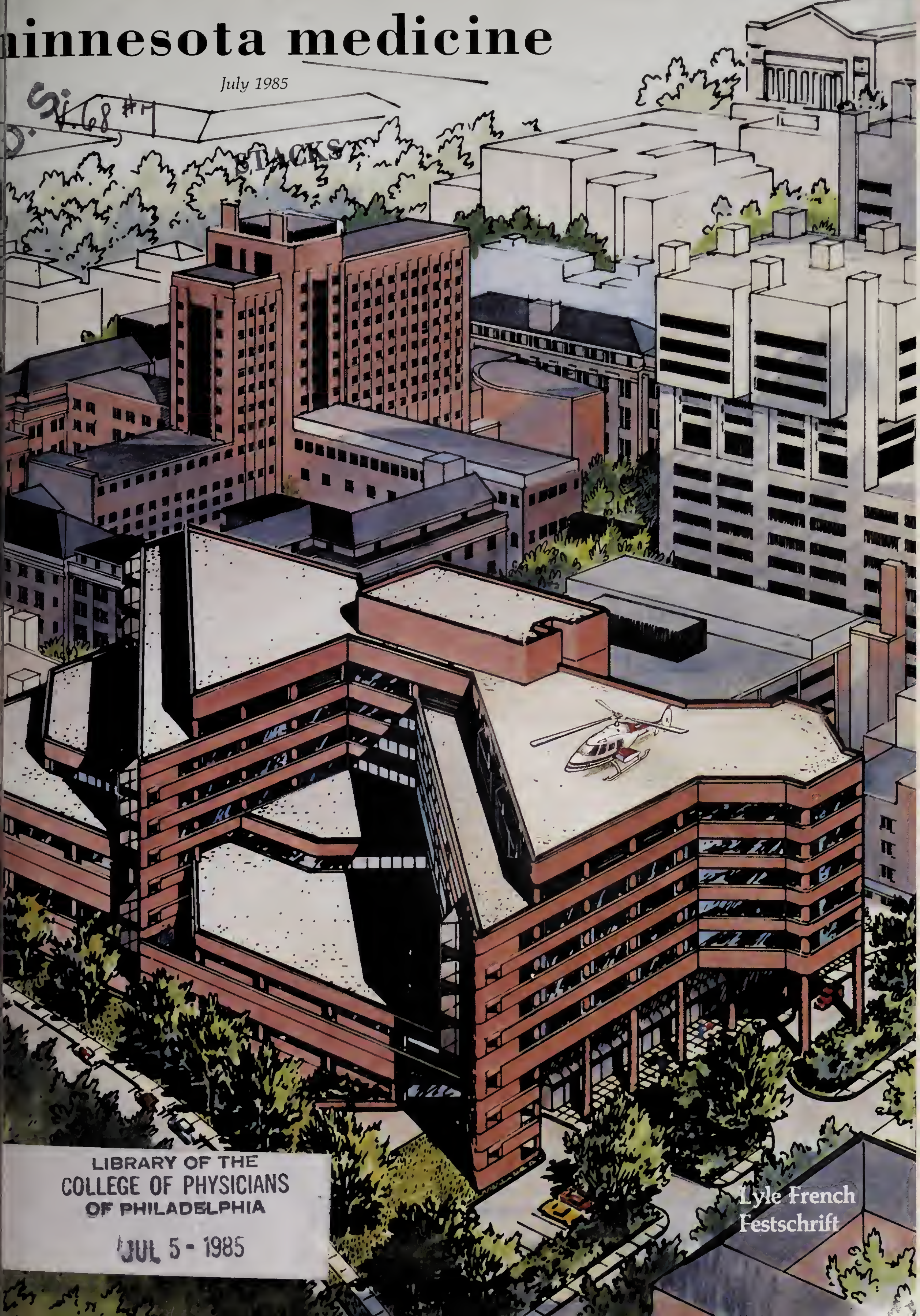

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President's Letter

Peggy Craig

M. Elizabeth Craig, M.D.
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In the mundane day-to-day process of every business or profession, rarely does one person rise above the common man to stand out as a very special person. Such a person is Dr. Lyle A. French, recently retired from the field of neurosurgery and to whom this issue of MINNESOTA MEDICINE is dedicated.

Dr. French came to Minnesota from South Dakota as a high school student and after receiving an undergraduate degree from Macalester College became a true University of Minnesota product, obtaining a B.S., M.B., M.D., M.S., and Ph.D. from that institution. He served as an instructor in neurosurgery in 1947, an assistant professor in 1948, became a full professor in 1957, head of the department in 1960, a position he held until 1972, and chief of staff of the University of Minnesota Hospital for two terms. In 1970, he added the prestigious University role of Vice President for Health Services.

Dr. French served in World War II in the European theatre as a member of the 26th General Hospital - a unit comprised entirely of University of Minnesota personnel.

The humaneness, concern for people, and great intellect of Dr. French are documented in many articles written by the more than three dozen neurosurgeons he has trained and who are themselves well known locally, nationally, and internationally for their clinical and academic excellence. He is a great and revered teacher. Outstanding in the writings and comments of his students and colleagues is the respect for Lyle French as a caring, concerned person who, while being a teacher, clinician, researcher, politician, and administrator, has followed the activities of his students and remained a friend, counselor, and advocate.

His respected and admired position in the neurosurgical world is reflected in the long list of his public service and government consultant positions, his board memberships, his publications, and his research activities. The name of Lyle French is known as a master clinician, an excellent teacher, and an exquisite researcher. The physical profile of the new medical school buildings, added during his years as Vice President for Health Sciences, stands as a memorial to his loyalty, concern, and love for his medical home.

It is a privilege and a pleasure for the Minnesota Medical Association to dedicate this issue of MINNESOTA MEDICINE to Dr. Lyle A. French, a man who "walks with kings, yet keeps the common touch."

Cover Photograph
New University
Hospital

Artist's view of the new University Hospitals located between the Variety Club Heart Hospital and K/E Cardiac Research Complex (just visible on the East River Road) and to the right, the Masonic Cancer Center on Harvard Street. In the background to the Northwest are the several quadrangles of the original University Hospitals, dating back to the turn of the century and the more recently (1954) constructed Mayo Memorial Tower. Just identifiable, over the roof-top of the new hospital is the Diehl Hall Biomedical Library, and adjacent of more modern construction is the 15-story Phillips-Wangensteen Building housing research laboratories, offices, and the outpatient facilities of the University Hospitals Complex. Beyond the P/W Building and again, of modern construction is the 17-story Moos Tower with offices and laboratories of the Medical School Basic Sciences, along with those of the School of Dentistry.

The honored Minnesota surgeon of this special issue of MINNESOTA MEDICINE, Dr. Lyle French, as Vice-President of Health Sciences from 1971 through 1983, guided the planning and ultimate development of this major expansion of the University Health Sciences complex.

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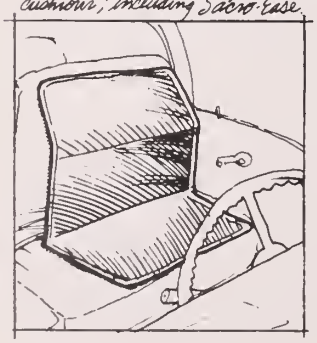

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Über Festschriften

EDWARD L. SELJESKOG, M.D., Ph.D.
Professor of Neurosurgery,
University of Minnesota,
Minneapolis.

In what many might consider the halcyon days of medicine, when medical and surgical practice had emerged as a profession based on scientific principles, ideals, and scholarship, prior to the time of computerization, incorporation, and health care competition, it was commonplace to commemorate the formal retirement of a great figure of medicine, with publication of a special issue of a medical journal as a Festschrift. In a literal sense, a Festschrift is a festival or celebration of writings. The customary format of presentation was that of a special journal issue containing a series of scientific articles by colleagues and former students of the senior renowned professor. In recent years, however, the publication of a Festschrift has succumbed to the pressures of editorial boards, costs of publication, authors, and advertisers' demands, and as Dr. Mark Ravitch pointed out in a brief 1984 editorial, a somewhat changed attitude toward our mentors and great medical figures. To this end, however, the editors and publisher of MINNESOTA MEDICINE have taken exception, to honor a notable figure of the Minnesota Medical Community, Lyle A. French.

That MINNESOTA MEDICINE should serve as a forum for publishing a Lyle French Festschrift is quite fitting, especially in view of his major contributions over a number of decades to the University of Minnesota Health Sciences, its medical schools, medical education in general, and in particular, scholarly pursuits and research within our specific academic institutions. Finally and equally important have been his contributions to the practice and art of neurosurgery nationally, internationally, and most notably within the State of Minnesota. His impact on the Health Sciences and medical education system within our state has been no small matter. Suffice it to say that his influence is personally experienced countless times each day by the state's practicing Neurosurgical Community.

Over the years, I have often recalled the line learned as a schoolboy from a story about the ancient King Ozimandius, whose tomb overlooking a deserted scene of some scattered shards and vestiges of a ruin, is inscribed: "Look on my works ye mighty and despair." Obviously, this memorable epitaph represents the misplaced perceptions of an egotistical leader. The message, however, is more than ever applicable to contemporary society where there are those among us who stand in awe of one's tangible and physical contributions to society or an institution. In the case of a great leader, however, the contributions endure and do withstand a test of time. Lyle French is a man who, obviously, is representative of this latter group of unique individuals, the extent of whose personal contribution extends well beyond the buildings and structures that he has been instrumental in erecting. His years of dedicated service are certain to leave with us a legacy that will permanently reside in the men and women exposed to the medical educational system that he helped to promulgate and to the standards of excellence, ideals, and scholarship that he fostered in medical and surgical practice.

Lyle A. French
Skilled surgeon, dedicated teacher, able administrator, friend and colleague.

Lyle A. French

June 30, 1985 marks the formal retirement of Lyle A. French after nearly five decades of commitment and service to the University and the State of Minnesota. A number of prior publications, needless to say, including that reprinted from SURGICAL NEUROLOGY on the following pages, have chronicled the details of Dr. French's biography, innumerable awards and honors, as well as his extensive past achievements.

To say that Lyle French represents a major figure among men of Minnesota medicine is an understatement. His contributions to neurosurgery in Minnesota, North America, and internationally do alone merit that salutation. Equally important, however, and spanning several decades has been Dr. French's influence and guidance of the growth and development of the University's Health Sciences and Medical School. For the past fifteen years and during his tenure as Vice President of Health Sciences, Lyle French in many cases almost single-handedly shepherded the administrative aspects of these many programs around major milestones and over seemingly insurmountable hurdles. His perseverance was rewarded, even during periods of University retrenchment, much to the consternation of other campus administrative units. These efforts have resulted in an unparalleled growth and programmatic development within the several components of the University's Health Sciences and are now coming to their ultimate fruition with the construction of the new University Hospital, now in its final stages of completion.

Most important, however, has been Lyle French's endowment through both word and deed in the establishment of ideals, scholarship, and standards of surgical excellence, within the academic and practicing medical communities. These will be the real legacy of this true leader, and to which this issue of MINNESOTA MEDICINE is dedicated by his friends, faculty, and former residents and associates.

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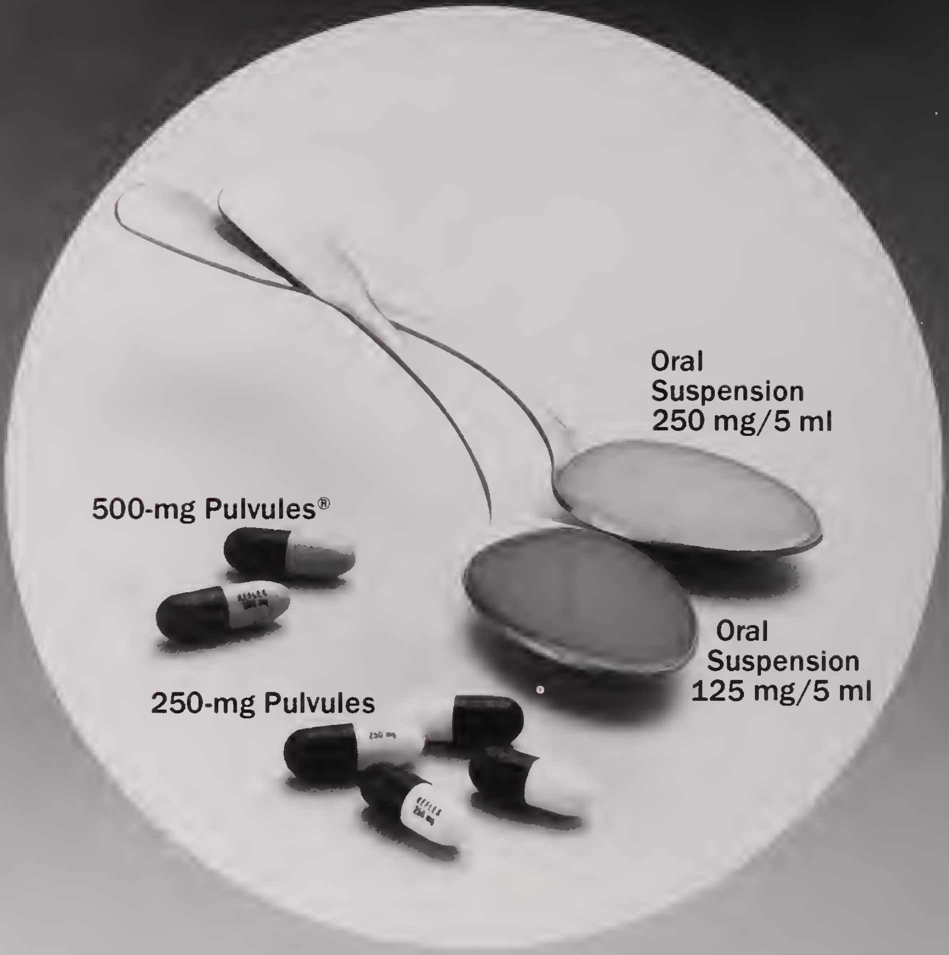

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Lyle A. French*

SHELLEY N. CHOU, M.D., Ph.D.†

To document Dr. Lyle A. French as a neurosurgeon is not too difficult a task as his achievements are already well known. To describe him as a man, however, is not as simple, particularly from a close range and after almost 30 years association with him and his family. To begin with, Lyle has, I think, the keenest sense of knowing people, their qualities and their needs. He uses this unique ability to put people at ease or on the alert, at the most opportune moment. The result is that he can bring the best out of people associated with him. He does not give pompous lectures nor does he intellectualize the issue involved. He says a few words, to the point, gives the certain look, sometimes mentioning something completely unrelated to the subject under discussion, either for effect or to break the tension, then to return once again to the dialogue. The result is captivating.

More recently, his duties as the Vice President of Health Sciences of the University of Minnesota impose upon him a substantial political role, but his dealings with people have not at all changed.

He seems to know when a certain person needs a pat on the back, or to ask a question to show his concern, or just to drop in to say hello, or to include someone in his family Thanksgiving or Christmas dinner. In short, he has the knack of knowing people's needs, and he seems to be always there to give a helping hand.

To me, and to many others, I am sure, he has been, for all these years a leader, a counselor, a big brother, sometimes almost a father and always a friend.

One might ask if it is possible for a person like Lyle French to give so much to so many for so long. I believe the answer is yes, provided there is a certain degree of satisfaction and also support. The former he receives by following the careers of those he has trained and helped; the latter from some of his close friends and most importantly, from his wife, Gene.

Lyle was born on March 26, 1915, in Worthing, South Dakota. He received his elementary education in South Dakota. The French family then moved to Mankato, Minnesota, where he obtained his high school education. Following his premedical collegiate work at Macalester College, St. Paul, Minnesota, he began his medical school education and subsequently graduate training in Neurosurgery under Dr. William T. Peyton at the University of Minnesota. He received B.S., M.B., M.D., M.S. and Ph.D. degrees from the University of Minnesota, 1936-1947. During World War II, he spent four years in the U.S. Army as a neurosurgeon mostly in the Mediterranean theatre of operations.

Lyle progressed up the academic ladder at the University of Minnesota from an instructor in Neurosurgery in 1948 to a full professor in 1957. He became the head of the Neurosurgery Department in 1960 and remained in that position until 1972. Since 1970, he has been the Vice President for Health Science Affairs at the University of Minnesota. He also served as Chief of the University Hospital's medical staff for two successive terms, 1968-1970.

Lyle belongs to many national and international neurosurgical organizations. He was president of the Neurosurgical Society of America (1957-1958), American Academy of Neurological Surgery (1972-1973), which also chose him in 1974 as "Neurosurgeon of the Year," and the American Association of Neurological Surgeons (1973-1974). He was the Vice-President of the International Society of Stereoencephalotomy (1967-1968). In 1976, he was the "Honored Guest" of the Congress of Neurological Surgeons, which is a distinction few neurosurgeons in the world have been given. He holds membership in many national and international professional organizations. To name them (25 in all) would be superfluous.

Dr. French's talent and expertise in and out of neurosurgery have made him a prime target for public service. He was a consultant in neurosurgery to the Surgeon General, U.S. Army, 1963-1975, a special consultant on Neurosurgery for the Veterans Administration, 1968-1973. He is on the Board of Governors of the American College of Surgeons and served on the American Board of Neurological Surgery, 1962-1968. He was a member of the Training Grants Program, National Institutes of Health, 1964-1969 and a member of the advisory council to the National Institute of Neurological and Communicative Disorders and Stroke, 1971-1975. He was on the Editorial Boards of MODERN

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[†] Professor and Head, Department of Neurosurgery, University of Minnesota.

MEDICINE, YEARBOOK OF CANCER and the JOURNAL OF NEUROSURGERY; of the latter he was chairman, 1973-1975.

He has trained close to three dozen neurosurgeons who are located throughout this country and abroad. Many have achieved distinction in the private sector; over half of his former residents have remained in academic medicine.

His investigative interest in neurosurgery is wide. Early on, he was interested in peripheral nerve injuries, their repair and their pattern of regeneration. Later, his interest was centered around neoplasms of the brain, thus his research in the use of ultrasonic and radioactive isotopic techniques of tumor detection and localization. He went on to an extensive study of cerebral edema and its therapy, to the surgical treatment of movement disorder by stereotaxic surgery, and to surgical treatment for temporal lobe epilepsy, as well as hemispherectomy for seizures due to infantile cerebral vascular lesions. Lyle has always been and still is a master technician. Most neurosurgical procedures to him are like a "piece of cake". But he never regarded any one of these, however minor, as simple or easy. He distinguishes himself, however, as a neurosurgeon who is extremely skillful at tackling aneurysms and arteriovenous malformations of the brain, and his operative results for these lesions can compare favorably with the latter-day microvascular neurosurgeons. A number of excisions of arteriovenous malformations were done under hypothermia, many moderate, some deep. This led him to a study of the use of Bretylium to combat cardiac irritability under hypothermia, in collaboration with the anesthesiology staff at the University Hospitals.

It would seem an incomplete tribute to Dr. French without mentioning in some detail, among all his important contributions to neurological surgery, the introduction of dexamethasone to combat edema of the central nervous system. In the late fifties, Dr. French and a then resident, Dr. Joseph Galicich, experimented with a new glucosteroid, dexamethasone. Dexamethasone was chosen because theoretically it had a potent anti-inflammatory but minimal sodium-retention property. It was used in patients with probable malignant or metastatic brain tumors having obvious mental obtundation and/or marked hemiparesis and aphasia. The dosage was arrived at more or less empirically — the surprising result was that many of these patients improved so dramatically within 24 to 48 hours that some patients refused angiographic studies — they did not feel ill enough to undergo such an invasive procedure!

It was felt that dexamethasone probably did not have a specific antitumor capability mainly because its beneficial effect upon the neurological recovery was so rapid and striking. Thus, Dr. French began a long series of laboratory experiments to study the effect of dexamethasone on cerebral edema. Vital dyes were used to study the possible effect of dexamethasone on the blood brain barrier which, if disrupted by a tumor or toxic process, would allow leakage of "fluid" from the vascular channels into the cerebral parenchyma. Later, ultrastructural investigations were conducted to document many important and basic findings of the pathophysiological process of cerebral edema.

Now, every neurosurgeon and many neurologists routinely use steroids to combat edema in the nervous tissue. The beneficial effect of steroid therapy is accepted and unquestioned. Who would have thought two decades ago that steroids to the neurosurgeons would be like antibiotics to the infectious disease team? The New York Academy of Medicine invited Dr. French to deliver a special lecture on cerebral edema and its therapy in 1966 in recognition of his contributions in this important area, not only of neurological surgery, but of medicine as a whole.

His other more important contribution to neurological surgery, I feel, is the refinement of the surgical approach for aneurysmal surgery. As mentioned earlier, Dr. French is a master surgeon. He had supreme confidence that he could handle a bleeding aneurysm. He was one of the first neurosurgeons to use induced hypotension for aneurysmal surgery. His technique to expose the anterior communicating artery aneurysms by removing a small medial frontal wedge to expose the aneurysm directly was an innovation before the era of the operating microscope. For aneurysms with broad necks, he had enough "guts" to rupture the aneurysm deliberately under hypotension so that it could be "sucked up" like a collapsed parachute and a clip accurately placed. This technique opened up new surgical techniques of treating intracranial aneurysms and significantly added confidence to all neurosurgeons. He demonstrated that with careful preoperative planning and intraoperative skill, most intracranial aneurysms could be treated surgically and safely.

To err is, of course, human, and Dr. French is no exception. When he makes a mistake he passes through an excruciating period of self-examination and soul search. He makes every effort to correct the mistake, and to prevent its future occurrence, sometimes immediately, sometimes very subtly and unobtrusively. But he does.

With the change in societal orientation, emphasis and priorities in the last generation, I often wonder if we'll ever again produce a neurosurgeon and a man like Lyle French. I sincerely hope we will, because we all benefit from such a person.

Lyle French at his last major operative procedure, September, 1982. After over 40 years of sound clinical judgment and surgical excellence, still evident, an ambidextrous, skilled technician.

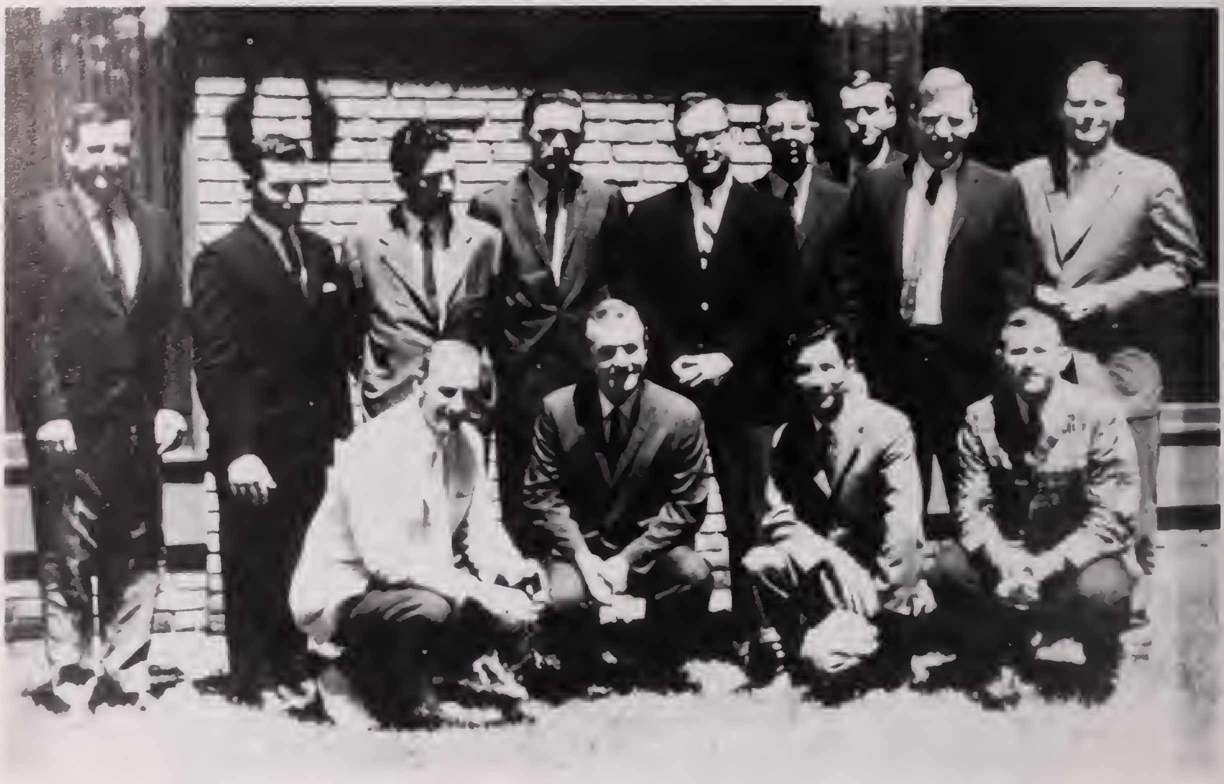

Figure 1

LEGENDS

Fig. 1 - "The Businessman's Lunch" - May, 1961. One of the highlights of training under Dr. Lyle French were the periodic visits from a visiting professor. Typically, this would be at week's end, with a Saturday morning informal brunch, usually at Dr. French's home. The casual atmosphere promoted comradery, but especially permitted a personal dialogue with the visiting professor. Pictured above in May, 1961 are Dr. Collin MacCarty (front row center), Professor and Chairman at the Mayo Clinic, with Drs. Chou and French adjacent. Can you identify any of the remaining group?

Fig. 2 - First Meeting of the Peyton Society in 1960. Pictured above are the organizing members of the Peyton Neurosurgical Society, including past and then current members of the resident staff. Dr. Peyton (front row center) at the time retiring, is flanked by several of his early residents and then current University Faculty. Seated front row (l-r): Doctors C.K. Olson, H. F. Buchstein, J. D. Levin, W. T. Peyton, L.A. French, L. A. Titrud and D. R. Simmons.

Fig. 3 - Second Meeting of the Peyton Society - October, 1965. In 1965 Dr. Lyle French had been Chairman of the Department for five years. He is surrounded by members of his Faculty, along with former and then current members of the Neurosurgery Resident Staff.

Figure 2

Figure 3

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Neurosurgery at the University of Minnesota 1937-1985

SHELLEY N. CHOU, M.D., Ph.D.*

The Division of Neurosurgery, of the Department of Surgery in the University of Minnesota Medical School, was founded in 1937. Dr. William T. Peyton was appointed Director of the Division. Dr. Peyton, who had been trained as a general surgeon with interest in head and neck surgery, and who had Ph.D. degrees in general surgery and anatomy respectively, was the natural choice. Dr. Peyton's Ph.D. thesis in anatomy was on the development of the temporal bone, and he had worked very closely with Dr. A. T. Rassmussen, who was a Professor of Neuroanatomy. Dr. Peyton and Dr. Rassmussen were able to continue joint investigations for many years and published a number of papers including one detailed neuroanatomical study of changes in the central nervous system following a mesencephalic tractotomy for the relief of pain in a patient with head and neck cancer.[1]

Dr. Peyton was certified by the American Board of General Surgery, and when the American Board of Neurological Surgery was founded, he was "grandfathered" in on the basis of his reputation and position as Professor of Neurosurgery.

Dr. Peyton's office was an 8 x 10 cubicle on Station 22. He had in his office a cabinet for books behind his desk and a small file cabinet. There was only one framed object hanging on the wall and that was a photograph of Dr. A. B. Baker with a gentle smile and a microscope in front of him. Dr. Baker was to shortly succeed Dr. McKinley as Director of the Division of Neurology. Dr. Baker was not only a renowned neurologist, but he also had extensive training in neuropathology. That these two men of extremely different personalities and persuasions could work together and train a large number of neurosurgeons and neurologists has to be considered an amazing feat. Dr. Peyton was a low profile, shy, reticent, man of few words. He was gentle, thoughtful, understanding, but appeared remote. Thus, recognition by his peers came to him rather late. Eventually he was elected into the Society of Neurological Surgeons, the most senior society for neurosurgeons, and the Harvey Cushing Society (now AANS). He was Vice Chairman, and then Chairman, of the American Board of Neurological Surgery. Dr. Baker, on the other hand, was a national person who was later to almost single-handedly lobby for the creation of the National Institute of Neurological Diseases and Blindness, which was to become the NINCDS of today. It is interesting to recall that during the early days of the Joint Neurology, Neurosurgery, Neuroradiology Conference with Drs. Peyton, Baker and Harold Peterson present, there could be a very interesting discussion taking place. Dr. Baker would go on and on for quite some time only to have Dr. Peyton say, "Well, we'll take a look to find out if you are correct." Dr. Peterson would then go on in his matter-of-fact way, pointing to the lesion on the Xray and saying, "tumor."

In the early days of Dr. Peyton's administration he had to work alone because World War II was looming on the horizon, and the young men were being taken into service. The University of Minnesota's 26th General Hospital soon moved to Europe with the North African campaign. Dr. Harold Buchstein, who was trained as a neurosurgeon at the Mayo Clinic, was able to help Dr. Peyton out for awhile, but he had to go also. Dr. Wallace Ritchie, a well-trained general surgeon in St. Paul, who gradually shifted to neurosurgical practice, was also helpful in the early days. Among the residents, Titrud, French, and Simmons all had to go. Following the war many came back to finish their training. French then stayed on as Dr. Peyton's associate. Jules Levin and Bob Merrick, who took part of his training at the Neurological Institute in New York City and had a Ph.D. in neuroanatomy with Dr. Rassmussen, followed as neurosurgery residents: then, Kent Olson, Paul Blake, Marty Feferman, Carrel Caudill, Gerry Haines, David Johnson and myself. Bill Ogle stayed for more than a year in the program and returned to Tennessee to practice. Purdue Gould came back from the Korean War to join the training program. In about 1956 Bo Sung Sim came from South Korea to study two years of neurosurgery under Dr. Peyton. He wrote a master's thesis on the anatomical investigation of the consequences of anterolateral cordotomy.

Following World War II, the Veterans

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*Professor and Head, Department of Neurosurgery, University of Minnesota.

Administration Hospital at Fort Snelling became closely affiliated with the Medical School. Neurosurgery, along with many other medical specialties, used the VA facility as a major training center. Residents regularly rotated through the "Fort". We had no full-time or seven-eighths staff there. Consultants were regularly scheduled to visit, to assist the resident(s) in patient management including supervising operative procedures. Dr. Buchstein and later Dr. Titrud from the community and Dr. French from the University were regular consultants. Dr. Peyton visited there only occasionally to perform operative procedures which were his "specialties", as we will further elaborate. Drs. Buchstein and Titrud rendered invaluable service to the teaching of residents and added a special dimension because of their private practice experience and their individual characteristics. We had our own OR at the "Fort" with Ruth Hanson, R.N. in charge. Ruth has since passed away, but her service to our early training program was extremely significant.

To begin with, Ruth was a neurosurgical nurse with the 26th General Hospital in the European Theatre of Operations. Dr. Wallace Ritchie was the C.O. of the neurosurgical unit. As indicated previously, Wally had been a general surgeon of significant stature who eventually became a certified neurosurgeon. He published an excellent textbook in general surgery about which he would later politely decline discussion because he wanted to be recognized as a neurosurgeon. The story went that during the North African Campaign, Wally Ritchie and Ruth Hanson were invited to a formal dinner by the local chieftan. It was an elaborate feast, lasting for some hours. The main course for the evening was a "steamed brain", sheeps brain from which the arachnoid and subarachnoid vessels had been meticulously removed. It was said to be a delicacy item served only on special occasions. Wally and Ruth had great difficulty eating this dish (their faces may very well have turned green) for, in that same afternoon, the two of them had operated on a huge brain abscess. I am certain the visual and olfactory imprint of that abscess had great impact upon their appetites.

Wally continued to support our neurosurgery service at the University until his death in 1969. A Wallace P. Ritchie Lectureship was set up in the Department by his family.

Ruth Hanson knew so much about neurosurgical operative procedures as an operating room nurse that she would tactfully hand the resident the appropriate instrument when it appeared that he was in a quandry as to what to do next before the consultant arrived to guide him along. I know that to be true because she helped me under these circumstances.

At the University, the Neurosurgery operating room used to be located where Station 51 is currently. Neurosurgery shared a large operating room with the general surgeons. We were able to operate only on Mondays, Wednesdays, and Saturday mornings. Tuesdays and Thursdays were used as clinic days. Dr. Peyton took Tuesdays, and Dr. French took Thursdays. The residents, after the morning ward rounds, would assemble in the outpatient clinic and take note of what was going on. These sessions were informative and relaxed. Once in awhile Dr. Peyton or Dr. French would do an alcohol injection for trigeminal neuralgia, injecting either the mandibular or the maxillary division, right then and there in the outpatient clinic.

In 1954, when the Mayo Tower was completed, we shared the current departmental office space with Orthopedics and started using Room I in the main operating room which we still use today. Our inpatients moved to Station 51. Station 52 was later added. Neurology has remained on Station 50. It was at the location where the Neuro ICU is located today that Dr. Peyton would start his Sunday 9 o'clock morning rounds with all the residents present and several former residents who were then in practice in the Twin Cities.

Dr. Peyton's favorite operations were retrogasserian trigeminal rhizotomy for tic, cerebellopontine angle tumors, aneurysms, cordotomies, and sympathectomies. He was an excellent surgeon. I recall one posterior communicating artery aneurysm in a patient at the Veterans Administration Hospital on whom I turned a flap. Dr. Peyton came in and used a subtemporal approach taking only 15 minutes to expose the posterior communicating artery and to put a silver clip on the aneurysmal neck. He had excellent judgment. He preferred simplicity in words and in deeds. He used the fewest number of words to make a statement or to ask a question. In the operating room he used the fewest number of instruments. He called the Olivecrona dissector, "The Thing with a Hole in It," which is what we still call it today.

Dr. Peyton retired in 1960, and I was asked to join Dr. French in the Division. Dr. Peyton stayed on as Professor Emeritus and shared an office with me.He was consulting at the V.A. several times a week and was still active as Chairman of the American Board of Neurological Surgery. Seeing each other often, we were able to talk about personal matters, beliefs, philosophies, etc. One morning, in the spring of 1962, while he was reading in the Biomedical Library, he suffered a heart attack. He was transported quickly from the library through the side door to the third floor of the Mayo Building and up the elevator to the fourth floor, then through the back door into Room I. Resuscitation was carried out successfully, and he was taken to Station 44, the Intensive Care Unit. He had a flail chest because of the resuscitation, and was unconscious for several days. On about the third or fourth day, when he was conscious enough to talk (in those days, tracheal intubation was seldom done for such critical situations), the first question he asked me was, "How is the Service?" He lingered on for many days. He became paraplegic, most probably because of hypoxia of the spinal cord during the period of hypotension. I am not certain to this day as to whether or not he was aware of the paraplegia. He died shortly. I remember distinctly when I was coming back to my office, Joe Galicich asked me how Dr. Peyton was, and when I told him that Dr. Peyton was dead, Joe broke down and cried. I got back in my office in time to cry by myself.

The Peyton Era was characterized by a small staff, close relationships, excellent clinical exposure, and training in judgment as well as in operative techniques.

In research, we had already begun to work on cerebral edema, trauma, brain tumors, peripheral nerves and tumor localization with radioisotopes. Physiological studies using radioisotopes were also carried out. Six of the twenty residents received Ph.D.s and several more, Masters Degrees in neurosurgery from the Graduate School during this period of time. In 1959, just prior to his retirement, all of the former residents gathered together here, along with close associates, Dr. Buchstein and Dr. Ritchie, to pay tribute to Dr. Peyton. It was the birth of the WTP Society which has held regularly scheduled meetings every five years as a homecoming event. This year's event is the sixth Peyton meeting. It is a special one in that it coincides with Dr. French's retirement.

With Dr. Peyton's retirement, s special issue of *The Journal Lancet* was dedicated to him in 1961. In it, there was brief resume of his life and accomplishments, as well as papers written by the staff at that time, the residents and former residents.[3] This issue of MINNESOTA MEDICINE, dedicated to Dr. French, is to carry on this tradition.

The French Era actually began before he became the Director of the Division of Neurosurgery in 1960. Dr. French was rapidly becoming prominent nationally; he was offered the position as Professor and Chairman of the Department of Neurosurgery at the University of Chicago as well as that of the University of Pennsylvania. At least these are the two places, to my knowledge, he went to visit. How many other offers he had, I do not know. Dr. O. H. Wangensteen, who was Chairman of the Department of Surgery, wanted Dr. French to stay on. In 1957 Dr. Wangensteen made a definite promise that Dr. French would become the Director of the Division in January of 1960.

Dr. French's interest at that time was surgery for intractable seizures. The two specific projects that he had were hemispherectomy and temporal lobectomy with electrocorticography. Dr. Manfred Meier, a clinical psychologist, was recruited to help in the assessment of these patients preoperatively and postoperatively. Dr. Frank Morrell participated as a neurologist and neurophysiologist.

In the mid-50s, Dr. French and I submitted the first research grant application for national funding. That application was submitted to the Atomic Energy Commission to continue the use of radioisotopes in both tumor localization and physiological investigation. In the former, we were trying to use positron scanning with coincidence monitors, and in the latter we were trying to use tagged protein to study CSF flow and turn-over. The site visit was made by one person. On the basis of three or four hours of interviews the project was approved and promised funding right on the spot. The second research grant application was submitted to the U.S. Public Health Service to study the effect of hypothermia on neuronal function as assessed by microelectrode technique. Again, the site visit was made by one person, Dr. Henry Schwartz of St. Louis. On the basis of his visit we were awarded the grant which was continued for three years. Dr. French then put in a training grant in Neurosurgery. A year or so later we submitted a separate training grant for cerebrovascular disease. These training grants brought in significant funding of $60,000-$80,000 a year (in a mid-1960's dollar value) which was unrestricted. We were able then to increase the training period from a required four years to five years. The laboratory period was increased, and elective neurosurgical training at Hennepin County Medical Center was added. Dr. Ed Seljeskog, who had three years of general surgery training at Hennepin County Medical Center and completed his training in Neurosurgery in 1968, was appointed Chief of Neurosurgery at Hennepin County. Additionally, some of the residents were sent away for further education or on exchanges with other institutions. Thus, Jim Story went to UCLA Brain Research Center; Joe Galicich and Don Long went to Dr. Matson in Boston for additional pediatric neurosurgery training. Ed Katz from Boston spent six months with us. Likewise, Erich Wisiol and Michael Carey went to spend six months with Dr. Collin MacCarty at the Mayo Clinic and in return we got Dave Brown and John Cleary. John stayed on as a staff neurosurgeon at St. Paul Ramsey Medical Center for a number of years until he left us to practice in San Diego. Don Long and Jim Ausman spent two years each at NIH. Jack Wissinger spent a year with Professor John Gillingham at Edinburgh; Ed Seljeskog spent six months with Professor Christianson in Oslo, Norway, and Don Erickson, always adventurous, spent almost six months in Shiraz, Iran. That, of course, was prior to Ayatollah Khomeini.

Meanwhile, many of the residents were involved actively in either basic or clinical research. Joe Galicich was the prime mover in using glucosteroids, specifically Decadron, for cerebral edema. The article by Galicich and French in 1961 has been often quoted as the first report on the use of Decadron for the treatment of cerebral edema.[2] Long continued his work on the ultrastructure of the CNS and later on added studies of permeability and transport systems in the CNS using specific markers. The latter experiments were done in collaboration with Igo Klatzo at NIH. Ausman used his two years at NIH to work on neuropharmacology and received his Ph.D. from George Washington University in Washington, D.C. Bob Maxwell further elaborated on the cerebral edema project with cold lesions in experimental animals using vital dye as the tracer agent. Strassburger, Galicich, and Story worked on stereotaxis, and Mike Carey and I studied brain abscess. Warren Boop, and later Ed Seljeskog, worked on the hypothalamic pituitary system.

In short, it was a period of greatly increased activity both in the clinical and experimental areas of neurosurgery. We were flexible in retaining a number of residents with funds from the training grants, and the additional year or years in their training definitely had a positive impact on the quality. Clinically, cerebrovascular surgery came into the fore. We were doing increasing numbers of surgical procedures on extracranial vascular problems, intracranial aneurysms, and intracranial AV malformations. The use of hypothermia, sometimes profound hypothermia with cardiac arrest was investigated, as well as induced intraoperative hypotension. Bill Bradley, then a neurology resident, spent some time on neurosurgery and worked with us on an implantable bladder stimulator for emptying of the bladder in paraplegics or quadriplegics. In fact, we implanted the first bladder stimulator in humans in 1962.[4] In spite of initial encouragement, however, this program was eventually shelved because of difficulty in the coupling process in terms of vesical smooth muscle contraction simultaneously with the striated muscle contraction of the pelvic floor. Nevertheless, this experience prompted us to develop methods to assess urodynamics using cystometrogram, EMG of the sphincters, evoked potentials that are now standard practice. Rockswold spent significant time to improve these techniques and worked on innervation of the detrussor as well as the sphincter in primates.[5,6]

Dr. John Moe, Professor and Director of the Division of Orthopedic Surgery at the University, had been one of the few specializing in correcting spinal deformities. As not a few patients with spinal deformities developed neurological complications either consequent to the natural disease process or secondary to surgical/non-surgical interventions, Neurosurgery was often called upon to consult and surgically manage such patients. Drs. Robert Winter and John Lonstein were residents in orthopedics then. We worked closely and performed the first transthoracic vertebrectomy in this country, a modified Hodgson procedure, in a patient with kyphoscoliosis.[7]. Continuing Neurosurgery-Orthopedic collaboration resulted in a later publication of a monograph, *Spinal Deformities and Neurological Dysfunction*.[8]

Toward the end of 1960, Dr. French became more and more involved in the planning of the Health Sciences of the University under President Moos. It was a natural move, then, that in 1970 he was appointed Interim Vice President for Health Sciences. He became Vice President in 1971 and remained in this position until 1982. Prior to that, Dr. French had already become a very prominent national figure in neurosurgery. He was President of the American Academy of Neurological Surgery which gave him the Neurosurgeon of the Year Award. He was a member of the American Board of Neurological Surgery. He was on the Editorial Board of the JOURNAL OF NEUROSURGERY and eventually became the Chairman for two years. He had been President of the Neurosurgical Society of America and of the American Association of Neurological Surgeons. He was a consultant to the Surgeon General and consultant to the Central V.A. Office in Washington, D.C.

It should be mentioned that in 1968 the Division of Neurosurgery became a Department in the Medical School along with Orthopedic Surgery and Urology. Dr. O. H. Wangensteen had retired in 1966. Dr. John S. Najarian became the Head of the Department of Surgery in 1967, but the move to have all the surgical specialties become independent departments had been afoot before Dr. Najarian's arrival. It was a smooth transition, and I think this worked out well for all concerned.

During the decade of 1960-1970 we had added new faculty members including Story, Long, Seljeskog, Ausman, Maxwell, and John Cleary. Jim Story eventually left to become Head of Neurosurgery at the University of Texas in San Antonio; Long to become Chief of Neurosurgery at Johns Hopkins; Jim Ausman, Head of Neurosurgery at Henry Ford Hospital in Detroit; and George Allen became Professor and Head of the program at Vanderbilt. Don Erickson, after a period of private practice in St. Paul, joined the faculty after Don Long left. John Cleary was at St. Paul Ramsey for several years, and that position was taken over by Willis Brown, Kenneth Murray, Steve Martin, Bee Thienprasit in succession and now by the triumvirate of Castillo, Brix, and Bingham. The St. Paul Ramsey situation has been less than stable because of the fact that we do not use that institution for residency training and, consequently, it has been difficult to keep staff men working there.

At Hennepin County Medical Center the directorship of the Division of Neurosurgery passed on from Ed Seljeskog to Gaylan Rockswold in 1977, and Mahmoud Nagib joined him two years ago. Hennepin County rotation by residents was approved by the Residency Review Committee twelve years ago, and it remains a valuable experience for the residents and medical students alike.

Since 1971 the mode of operation of the Department of Neurosurgery has been undergoing a gradual but definite change. I suspect one reason has to do with personality. I believe in participatory administration. I also believe that the office of the Headship and the person who happens to hold that office should, as far as possible, be distinct. This issue is perhaps too subtle, and the line is too thin. At times I am certain there can be a question of leadership -- who is running the Department?

In the past ten years there have been major changes in the health delivery system, in the way services are reimbursed, and in the availability of funds for research. Additionally, the competitive market in the form of HMOs, PPOs, etc. have a direct impact on neurosurgery at the University of Minnesota Hospitals. Cost containment and the increasingly important medical ethical issues have become major concerns for us in Neurosurgery.

Briefly, let me enumerate what has taken place in the past decade. First, we have increased the space in the basic science laboratory. Jim Bloedel joined us in 1968 to add a major dimension to the department. Many residents trained with him. Heinrich Bantli joined the department and worked with Bloedel for awhile. Tim Ebner came on to join Bloedel five years ago. In addition to neurosurgery residents we had eight trainees, either post-doctorate fellows or graduate students, trained under them. Last year Bloedel left us to join the Barrow Neurological Institute in Phoenix. It was a great loss to us. But fortunately Tim Ebner stayed, and I believe he will carry on in excellent tradition.

We have significantly improved departmental space. Faculty office space became reasonably adequate, though additional facilities are still needed. We have our own conference room, and for the first time in the history of the institution, a designated, spacious room was renovated for the resident staff, which also houses the departmental library.

Educationally, the traditional conferences continue. Additionally, I have introduced "Professor's Rounds" on Fridays and management conferences on Tuesdays. The former is designed to have a regular dialogue with the residents in scientific, ethical, and practical matters as they relate to neurosurgery. The latter has to do with developing a total perception of patient care in terms of physician-nursing-hospital-administration-patient communication and understanding.

The faculty has been stable. We added two very valuable members in Steve Haines and Dennis Turner. Each has his own distinctive strength, Steve in clinical research particularly in statistical analysis and clinical trials, whereas Dennis is interested in basic, single neuron physiology using brain slice techniques. On the clinical side we have set up subspecialization for the faculty members. Last year we established a Division of Pediatric Neurosurgery with Steve Haines as Director in the hopes that we would be able to collaborate better with pediatrics and pediatric neurology to enhance research, teaching, and service. There has been already some change in external referral patterns in these subspecialty areas. There has always been good internal referral and consultation. Along this line we also have developed collaborative projects with different departments. The Comprehensive Epilepsy Program is an example, with Bob Maxwell participating fully; and the Spinal Center which is a joint effort of the Spinal Cord Society based in Minnesota and the University. The Spinal Center is a collaborative effort of the Departments of Neurosurgery, Orthopedics, Urology, and Physical Medicine and Rehabilitation.

The Department continues to be quite visible nationally. Ed Seljeskog was on the Residency Review Committee for six years and the Secretary of the AANS. Steve Haines is Program Chairman of the Congress of Neurological Surgeons, and both Turner and Ebner are quite active in the Neuroscience Society. I served a term on the American Board of Neurological Surgery and am currently a member of the Residency Review Committee. I also served as President of the Neurosurgical Society of America, the Senior Society, and Vice President of the AANS. It should also be mentioned that a number of Minnesota graduates in neurosurgery served as officers or on executive bodies of national organizations. Augie Geise was the President of NSA as was Luke Hodges, and Jim Story is now its president. Warren Boop and Luke Hodges both were President of the Southern Neurosurgical Society. Many served in other organizations such as the American College of Surgeons, state neurosurgical societies. etc. I am reminded of the journal of SURGICAL NEUROLOGY's surveys of program directors in neurosurgery,[9] of the ten best programs for training neurosurgeons and the ten best programs for turning out neurosurgery academicians. The University of Minnesota was on both lists. I recall there was a great deal of criticism regarding these surveys pointing out that it was only based on the perception of the program directors and that many program directors did not respond. I believe these criticisms were valid, and the result of the survey can only be taken as an indication of the feelings of the Neurosurgical Community. I mention this only to show that in order to keep a training program in a quality position, there needs to be constant vigilance, cooperation of the staff and residents and long range planning. In looking at the graduates of the University of Minnesota Neurosurgery training program almost 50% of the graduates are in academic positions. We have trained a total of 68 residents in 49 years. Among them, nine have been or are program directors and chiefs of the service. Additionally there are five full professors, five associate professors, twelve assistant professors and one instructor. The other half have prestigious positions in the private sector, and many of them are involved in national neurosurgical organizational activities. Resident trainees such as Ruiz, Chu, Choi, Mohandes, and Chanyavanich have returned to lead neurosurgical services in their home countries. All of our trainees are in good health except one who died a few years following his training, a tragedy of waste of youth and talent.

Looking at the future, a major concern is funding of graduate medical education. The Federal Government and other third party payers are not willing to foot the bill for training in Neurosurgery or in any other specialty. I am certain this will be a very serious issue over the next five years. The selection of residents through the matching program has lessened our administrative pressures and inequities. I believe that is going to continue. Subspecialization is to continue and be further defined. The explosion of new information in neurosciences, I am sure, will result in new clinical applications. It is not too remote to think that we would be doing brain cell transplants for conditions in which lack of a neurotransmitter could be identified. With high technology on the one hand and cost constraints, as well as the prospective reimbursement plan on the other hand, neurosurgical care and joint decision making with the patient and families will become more and more of a challenge. Whatever the trend may be and wherever neurosurgery may take us in the next decade, I hope that we at the University of Minnesota and our graduates from the training programs will have substantial input.

I have tried to give a historical review of the department and the people that were and are associated with it. In the space available, I cannot provide an account of everything and everybody. I apologize to those whose names did not appear in this paper, and I am entirely responsible for any inaccuracy that may have been inadvertantly introduced herein.

In preparing this review, several important items came into focus. First is the recognition that there were and are many hidden heroines in the evolution of the department. Wives of many of us, staff, and residents alike, have contributed a great deal in making us what we are. Clara Peyton, Gene French and Jolene, in their own way, have done their part, as have wives of present and former faculty members and wives of a number of residents, past and present. Second, we have had, over the years, a number of nurses and secretaries working diligently and givingly to further our mission of teaching, research, and service. Third, it seems that perceptions of the more distant events and personalities came into focus far more clearly than those of more recent vintage. I cannot help being curious as to how the present will be viewed some years from now. I guess we will have another day and another story.

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Use of Dexamethasone in Treatment of Cerebral Edema Associated with Brain Tumors

JOSEPH H. GALICICH, M.D., LYLE A. FRENCH, M.D.,
and JAMES C. MELBY, M.D.

Minneapolis

SUMMARY AND CONCLUSION

1. Fourteen patients with increased intracranial pressure as a result of brain tumors were treated with dexamethasone, a potent synthetic glucosteroid, to determine its effect on localized cerebral edema.
2. Of the 14 patients, 13 showed dramatic improvement as evidenced by relief of signs and symptoms of increased intracranial pressure and decrease in neurologic deficit. In 2 cases, angiographic proof of a decrease in the size of the intracranial mass was obtained.
3. Improvement in these cases is undoubtedly a result of decrease in the edema surrounding the tumor and illustrates the surprisingly great contribution of localized cerebral edema to the neurologic deficit in such patients.
4. It is our impression that patients receiving glucocorticoids before or immediately after surgery generally have an unusually benign postoperative course.
5. With the exception of 1 possible case of gastrointestinal bleeding, no deterimental complications attributable to dexamethasone therapy were observed.
6. A discussion of the possible mechanism of action in decreasing brain edema is presented.
7. It is concluded that treatment of localized brain edema with dexamethasone is safe and highly effective.

The title, summary, and conclusions from the 1961 landmark article by Galicich, French, and Melby regarding the beneficial effects of glucocorticoids in the treatment of cerebral edema. This article, which appeared in the JOURNAL LANCET (81:46-53), was based on fundamental laboratory investigations from the previous several years in the University of Minnesota Neurosurgery Laboratories. Prior to this report, there had been only scattered, occasional case reports alluding to the effects of steroids on various cerebral conditions. Publication of this small, but significant, clinical series heralded in a wide range of neurosurgical and neurological applications of this effective drug.

H. Buchstein

L. Titrud

J. Levin

C. K. Olson

R. Merrick

P. I

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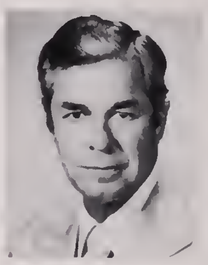
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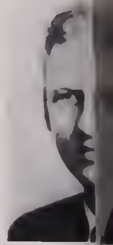
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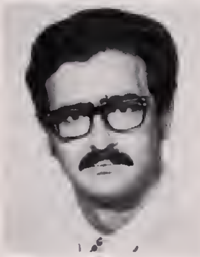
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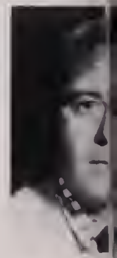
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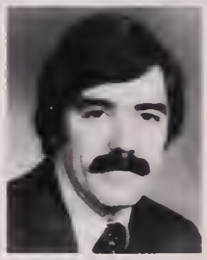
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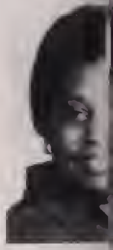
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William T. Peyton Society
1960 — 1985

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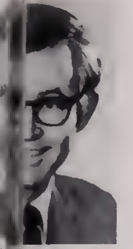
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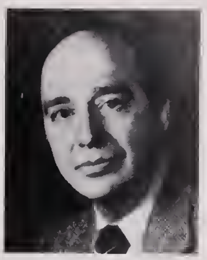
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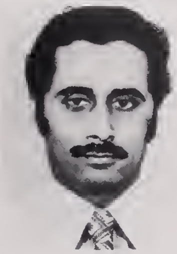
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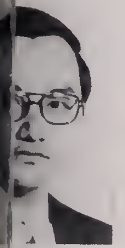
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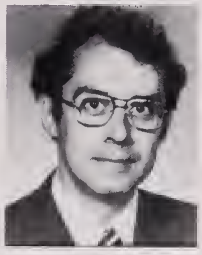
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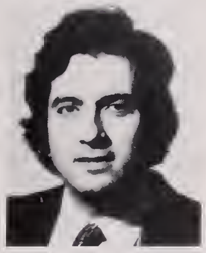
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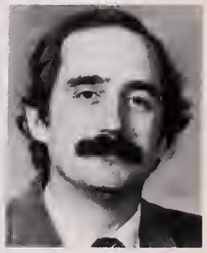
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E. Seljeskog

D.Erickson

R. Maxwell

S. Haines

D. Turner

Present Faculty

Changing of the Guard - Have Times Really Changed?

In the late 1940s and early 1950s the Neurosurgery Residency Program at Minnesota was well established. It was customary at the time to hold formal neurosurgical rounds on Sunday morning to be attended (without exception) by all of the resident staff and University Faculty. This seemed to be the best time for all of the participants to review activities of the past week, current problems, and the forthcoming week's surgery schedule. At this time, rumors were beginning to surface concerning the potential future retirement of Dr. William Peyton and, of course, his successor and all of the related ramifications.

On this particular Sunday morning, Dr. Peyton arrived for rounds obviously attired in a sparkling, new white laboratory coat. Dr. Peyton, of course, had acquired a rather notorious reputation for wearing his white physician's coat longer than any other staff surgeon. Lyle immediately became rather withdrawn and quiet, sensing the message that there would be no change in the directorship, at least for the next few years.

Some four years later, upon returning from the Korean conflict, Lyle and I entered Dr. Peyton's office and found him to be trimming the frays from this very same white coat. Lyle, once again, sensed the message, but this time not without a bit of lighthearted verbal protest, since he now again perceived that there would be no change of command at least for the immediate future. Such were the ways in the early days of Minnesota Neurosurgery.

PLG

"Frenchisms"

For those fortunate individuals who had an opportunity to spend a portion of their neurosurgical training under the guidance of Lyle French, one gathered over the years in addition to a superlative surgical education, a number of witticisms. These maxims often played a major role in one's outlook on the practice of neurosurgery, but most particularly, they influenced one's day to day conduct within the Neurosurgery Department. Among the Resident Staff, at the time, these collectively were referred to as "Lyle Frenchisms." One always had his favorites, but one particular quip that was experienced firsthand by all of the Resident Staff, without exception, included the following:

"The Department of Neurosurgery at Minnesota is run by just two rules: 1. The Chief is always right!! 2. When in doubt, refer to Rule #1."

Anonymous

Minnesota Neurological Surgery Department

Reflections on the Early Days

LEONARD A. TITRUD, M.D., Ph.D.*

The Neurosurgery Department at the University of Minnesota was founded in 1939 by an informal agreement between Dr. Owen H. Wangensteen, Chief of Surgery, and Dr. William T. Peyton, one of his senior staff members. Dr. Peyton was an accomplished anatomist and a general surgeon with interests in head and neck surgery. For some time he had carried out various neurosurgical operations and had developed a particular interest in the field.

By good fortune I was a resident on Dr. Peyton's service in these early days, assisting him in the Cancer Clinic that he directed with Dr. Stenstrom of the Radiotherapy Department, as well as on his surgical service. By this time I had completed two years of internship, two years of a general surgery residency, and was on a National Cancer Fellowship and, of course, readily accepted Dr. Peyton's invitation to work on the new "neurological surgery service."

The Neurological Surgery Department gradually developed and prospered in conjunction with medical neurology, pediatrics, and other hospital services. There were numerous tumors for surgery and many of the operations required long hours. Intratracheal anesthesia was being developed. There were numerous encephalograms, myelograms, and ventriculograms. Cerebral angiography had not yet been born, and cerebral aneurysms and malformations were still autopsy curiosities. Vascular x-ray studies and vascular surgery had to wait for the end of World War II in 1945.

During this early period the residency program developed in its formative stages. Dr. Wallace P. Ritchie of St. Paul, a trained general and plastic surgeon who was interested in neurosurgery, would often work on the University service. About this time, in 1940 or so, Dr. Lyle A. French arrived. No one seemed to know where he came from, but he proved to be a most congenial fellow. There were many stalwarts who followed and took their turn: Doctors Donald Simmons, Jerry Haines, Robert Merrick, Carrel Caudill, C. Kent Olson, David Johnson, Purdue Gould, etc. For several years there was one new resident a year whose stay would be about four years. Over the years, this gradually expanded to the current six-year period of training.

During the interval of 1941 to 1945, the 26th U.S. General Army Hospital, staffed by nurses and doctors from the University of Minnesota Hospitals, were mobilized for duty in World War II. The clinical staff of the neurosurgery service was immediately decimated. Doctors Wallace Ritchie, Lyle French, and myself left for campaigns in North Africa and Italy, and Peyton had to fend for himself during our absence with a variety of help. Upon return of the warriors, the service began to become better organized. An expansion occurred to develop a formal neurosurgical service at the Minneapolis Veterans Hospital. Dr. Harold Buchstein helped a great deal in providing support for the VA neurosurgical service, as well as in carrying on his Minneapolis practice.

My fellowship ended in 1946 and I entered private practice in Minneapolis, but continued to help with the Veterans Hospital service. Dr. Lyle French gradually became more restful and fortunately decided to stay at the University. As everyone knows, the department continued to expand; it became more efficient, with an ever increasing amount of clinical material, a better teaching program and research projects, and gained national prominence under the guidance of Lyle French.

In his retirement may he continue to have good health and low golf scores. He has done a good job for Minnesota!

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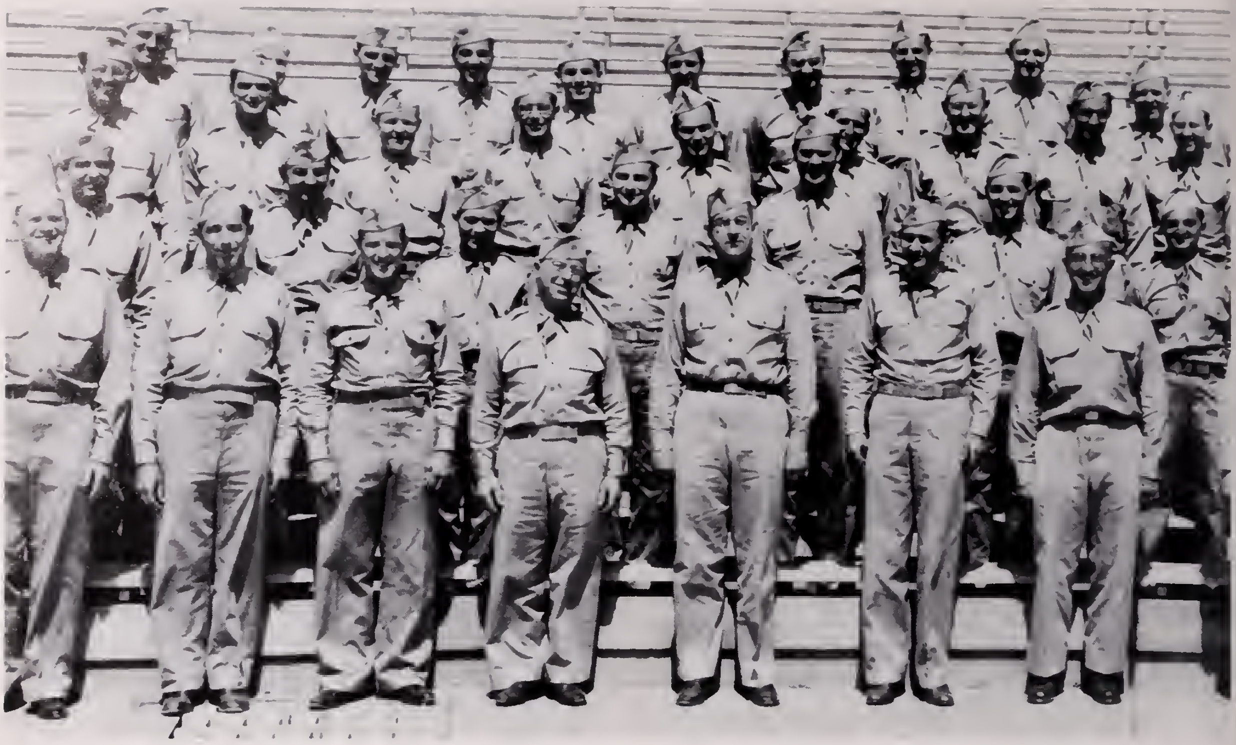
*Neurosurgeon, Minneapolis. Clinical Professor Emeritus, Department of Neurosurgery, University of Minnesota.



The "Minnesota" 26th General Hospital - 1942

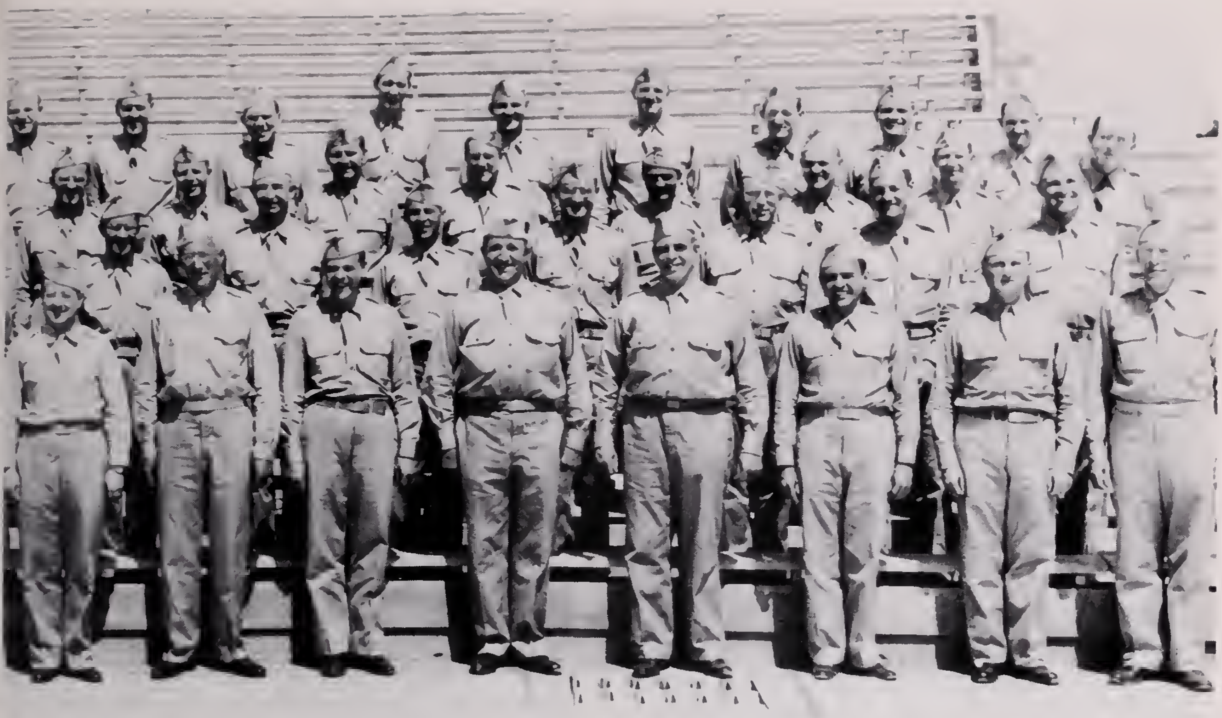
Present are a number of our present and past senior colleagues from the Twin Cities and outstate medical communities. Dr. French is found in the above photo, third row, second from the right. (Editorial Observation: Note the "Texas Tan".) The remainder of the group include:

Bottom Row (Left to Right): Reuben Erickson, Phillip Hallock, Douglas Head, Samuel Weisman, Harvey Beek, Ralph Marx, Joseph Borg

Row #2 (Left to Right): Francis Clark, Theodore Bulinski, Paul Kabler, Baxter Smith, George Hall, Lyle Hay, Oscar Lipschultz

Row #3 (Left to Right): Lyle Brecht, Vincent Swanson, Robert Johnson, David Craig, Israel Falker, Charles Polan, Albert Hayes, Lyle French, Evrel Larson

Top Row (Left to Right): Herman Koschintzke, Laverne Strough, William Martin, Louis Caruso, Robert Green, Frank Kiesler, Virgil Ohlen, Richard Reilley, John Haserick, John Galloway



The "Minnesota" 26th General Hospital - 1942

Bottom Row (Left to Right):	Floyd Kilgore, Lucius Fowler, John Paine, Arthur Plankers, Edward Evans, Wallace Ritchie, Jerome Hilger, Gordon MacRae
Row #2 (Left to Right):	Arnold Kremen, Robert Barr, Lawrence Nelson, Robert Hebbel, Harold Worman, Leonard Titrud, Eugene Ahern
Row #3 (Left to Right):	Karl Sandt, Russell Lindgren, Theodore Varney, Jack Chalek, Anthony Scholtis, Eldon Mohler, John O'Brien
Top Row (Left to Right):	Stanley Lundblad, George Bergh, Rodney Sturley, William Hollinshead, John Adamson, Walter Sievers, Randall Derifield, Urban Zehnpfenning, Robert Boren
Officers Not On Photo:	Meyer Goldner, Conrad Holmberg, Charles Peterka, Claude Hale, Norman Holte

Basic Neuroscientist in a Neurosurgical Department
Is the Experiment Working?

JAMES R. BLOEDEL, M.D., Ph.D.*

In 1968 the Neurosurgery Department at the University of Minnesota decided to undertake an interesting venture, the addition of a nonclinical neuroscientist to the faculty of its department. Contrary to the approach used by most clinical departments at that time, Dr. Lyle French was interested in recruiting someone to establish a scientific program primarily directed by the scientists within the laboratory. Previously, most clinical departments recruited research scientists principally as employees obtained to enhance the technical expertise available in the clinical research laboratories. It was hoped that the evolution of the program at the University of Minnesota would incorporate the residents and other members of the department and provide a strong didactic basis for the Department's scientific educational goals. Although this idea does not seem particularly risky or unique in 1985, in 1968 only a few other neurosurgical programs, most notably the programs at the University of Washington under Dr. Arthur Ward and the Barrow Neurological Institute directed by Dr. John Green, had sought a strong scientific association with basic neuroscientists.

In "experiments" of this type, a very critical assumption is required: that the research and teaching programs evolved by the basic neuroscientist will be consistent with the goals of the department initiating the laboratory. Unequivocally, the likelihood of attaining this objective is extremely difficult to predict, in part because the success of this arrangement is very dependent on some critical, intangible issues and mutual support: the scientist hoping that the clinical department will maintain and progressively evolve its priorities concerning the new research unit, and the department hoping that the program of the neuroscientist does not lose its focus, become disinteresting to the neurosurgical residents, or become a nonrevenue-producing burden on departmental resources rather than a source of pride and accomplishment within the scope of the departmental objectives.

Since the 1960s, several neurosurgical programs have either recruited investigative basic neuroscientists or established working relationships with individuals in basic science departments within the same institution. Because the association between these basic neuroscientists and the various clinical neurosurgical departments must still be considered an experiment in progress, the overall impact of these relationships, both on the neuroscientists as well as on the evolving priorities of the clinical departments, cannot yet be adequately assessed.

However, certain clear advantages are readily apparent in the more conducive environments. First and foremost, the basic neuroscientist as a trained professional research scientist greatly enhances the level of sophistication at which experiments are performed within the neurosurgical department. This is often evident in the increased technical capability within the department's research laboratory and the improved experimental design and statistical evaluation in clinical studies employing patients. In addition, there is an enhancement of the didactic portion of the training program. It is inherently difficult to organize a cohesive, well-balanced, didactic series of lectures on various aspects of clinically applicable basic science using guest lecturers appearing intermittently at grand rounds or special lectures. Because these lecturers do not have continuity within the department, they do not have a working basis on which to evaluate the needs as well as the progress of the residents in training.

The environment created by a basic neuroscientist in the laboratory facilitates the research training of the residents. The association between scientist and resident is critical for obtaining proper technical training, including training in experimental design. In addition, the existence of an ongoing research program under the direction of the research scientist greatly increases the likelihood that the efforts of the resident will be productive, leading to solid publications as well as presentations at professional meetings. Although these advantages are most valuable in programs requiring one or two years in a research laboratory as part of the residency training, the increased anatomical, physiological, and pharmacological information gained by the resident is also useful and applicable to clinical neurosurgery. Furthermore, the increased breadth of departmental conferences resulting from the participation of basic neuroscientists is also relevant to the clinical training of the residents.

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*Chairman, Division of Neurobiology, Barrow Neurological Institute, Phoenix, Arizona, Formerly, Professor, Department of Neurosurgery, University of Minnesota, Minneapolis.

Reprint Address: James R. Bloedel, M.D., Chairman, Division of Neurobiology, Barrow Neurological Institute, 350 West Thomas Road, Phoenix, Arizona.

As in all experiments, there are conditions which adversely affect the outcome of this relationship. The clinical department may be required to support, at least intermittently, a laboratory program which does not involve members of the clinical staff. Historically, residents tend to pursue research interests consistent with those of their clinical mentors. Consequently, the department may conclude that the research program has progressively evolved outside its research interests. Furthermore, in 1985 there are many economic issues potentially detrimental to the support of a strong laboratory program in a clinical department. For example, there is increasing pressure for clinical departments, particularly surgical departments, to contribute a greater percentage of their revenues to a central fund managed by the administration in order to offset operational deficits in other segments of the medical school. In addition, the central administration of some medical schools requires clinical departments to derive a progressively greater percentage of their operational budget from revenues resulting from clinical services and proportionally less from institutional sources. DRGs also will reduce the flexibility of financial resources within clinical departments. Consequently, a research laboratory may be perceived as an expensive "luxury" staffed with laboratory scientists (as well as research oriented clinicians) which should be replaced with faculty having greater potential for producing departmental revenue.

Analogous to any experiment, there will be successful trials as well as trials suggesting the experiment should be discontinued. As an optimist regarding both the value as well as the importance of the liaison between basic and clinical neuroscience, particularly in programs with an academic emphasis, I must support the continuation of this experiment. Because the relationship between the basic neuroscientist and the clinical department is still experimental in most settings, a viable test of the hypothesis on which this relationship is based requires strong but objective enthusiasm in pursuing the overall experimental objectives: the progressive development of scientifically sound and pertinent research programs in clinical departments and the training of residents with strong scientific backgrounds conducive to productive neurosurgical careers.

Dr. Lyle French made a commitment to this experiment at its most difficult and critical point: its beginning. Hopefully, the discipline, as well as the institutions which support it, will continue to pursue programs in which this critical relationship can flourish.

Physicians Philanthropic Foundation of the MMA

To MMA Members . . . .

Harold W. Brunn retired from the Minnesota Medical Association on September 1, 1984, after 32 years of dedicated service to MMA. The 1984 MMA House of Delegates requested that, in recognition of his long time interest in medical students, a Harold W. Brunn Fund be established to assist medical students. I am pleased to announce the creation of the Harold W. Brunn Fund by the Board of Directors of the Physicians Philanthropic Foundation of the MMA. Your contributions will recognize Harold's dedication to our profession and will be used for low interest loans to needy medical students. Please designate the Harold W. Brunn Fund with your contribution.

John J. Regan, Sr., M.D., President
Physicians Philanthropic Foundation of the MMA

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Further Experience in the Management of Craniofacial Dysmorphic States

MAHMOUD G. NAGIB, M.D.*; ERICH S. WISIOL, M.D.*; BRUCE B. SHILLING, M.D.;+ THOMAS W. PURCELL, M.D.† and DAVID E. TUBMAN, M.D.#

Over the past five years, 72 children with craniofacial dysmorphic states were evaluated and treated by the authors. A review of the various anomalies encountered is included. Emphasis will be placed on the evolution of the radiological evaluation and surgical treatment.

Since our initial report concerning the evaluation and management of craniofacial dysmorphic states[4], 72 patients have been treated by the authors. Patients with sagittal and lambdoid synostosis without other anomalies have been excluded from this series.

A diversity of craniofacial dysmorphic states have been identified by Hoffman and other investigators.[2]

A summary of the craniofacial dysmorphic states encountered by the authors over a period of five years is included in the Table.

TABLE

Craniofacial Dysmorphic States

Plagiocephaly (unilateral coronal synostosis)	35
Trigonocephaly	13
Hypertelorism with midline facial dysraphism	3
Crouzon's syndrome	9
Apert's syndrome	9
Kleeblattschadel anomaly	1
Secondary oxycephaly	1
Conradi-Hunneman syndrome	1
Total	72

Through the presentation of three illustrative cases, the authors wish to review the management of this group of patients. Emphasis being placed on the evolution of the diagnostic and surgical aspects of treatment.

Case Reports

Case 1 - Plagiocephaly

A six-and-a-half-month-old was examined

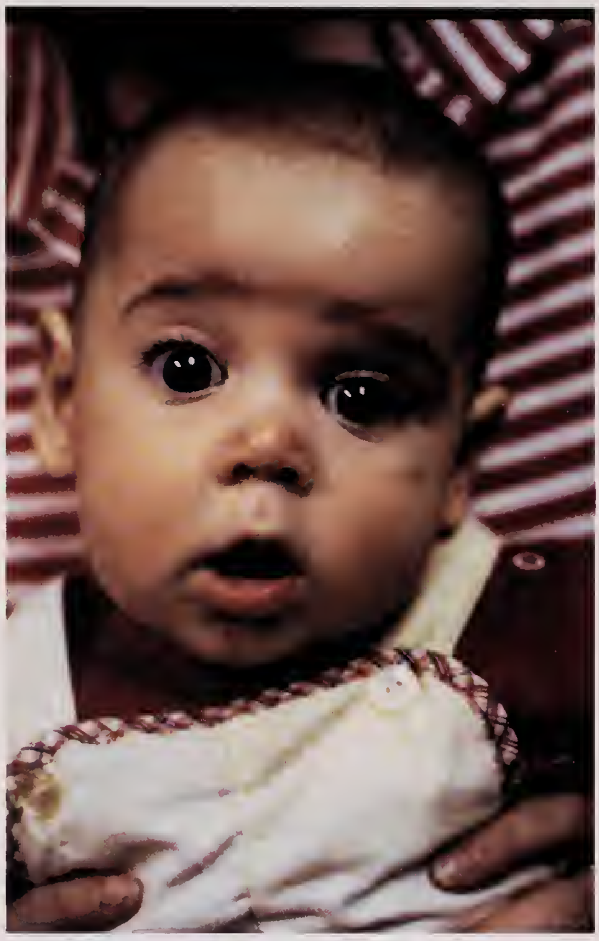

Figure 1(A)

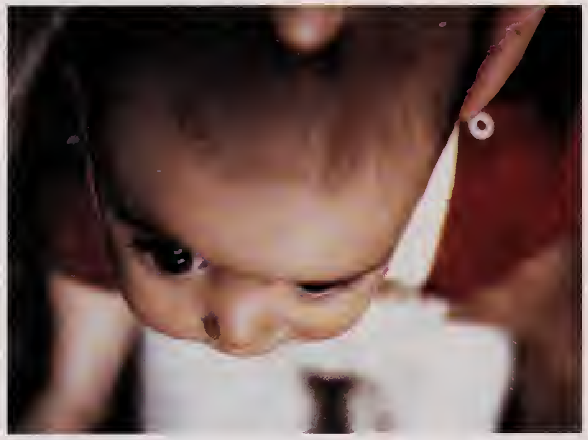

Figure 1(B)

Figs. 1(A) - 1(B) - Preoperative facial views demonstrating the characteristic features of plagiocephaly (unilateral coronal synostosis). (By permission)

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*Neurosurgeons, Minneapolis.
+Plastic Surgeon, Minneapolis.
†Ophthalmologist, Minneapolis.
#Radiologist, Minneapolis.

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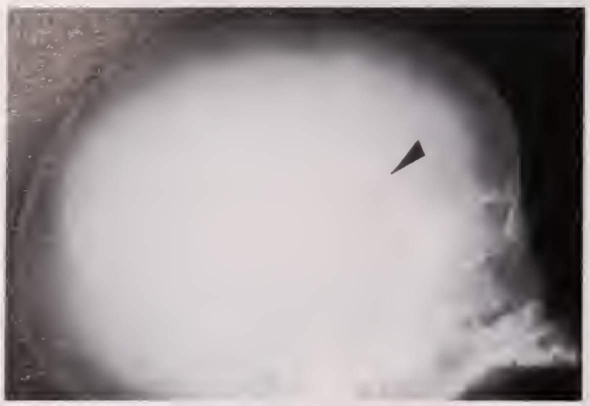
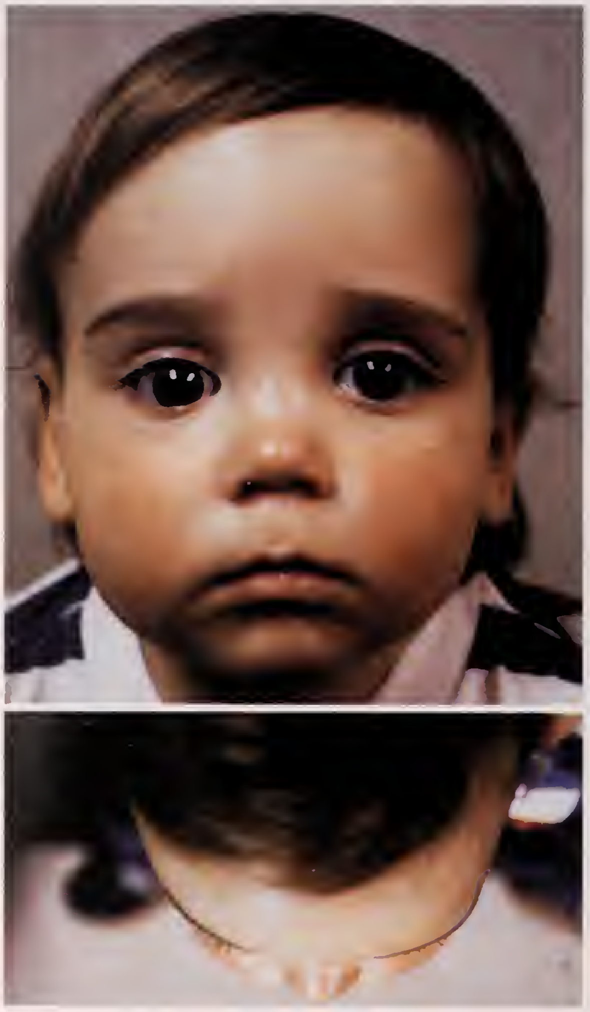


Fig. 2 - Lateral plain skull Xray demonstrating sclerosis of the right coronal suture (arrow). (By permission)



Figs. 3(A-top) - 3(B-bottom) - Follow-up facial views demonstrating a satisfactory cosmetic correction of the deformity. (By permission)

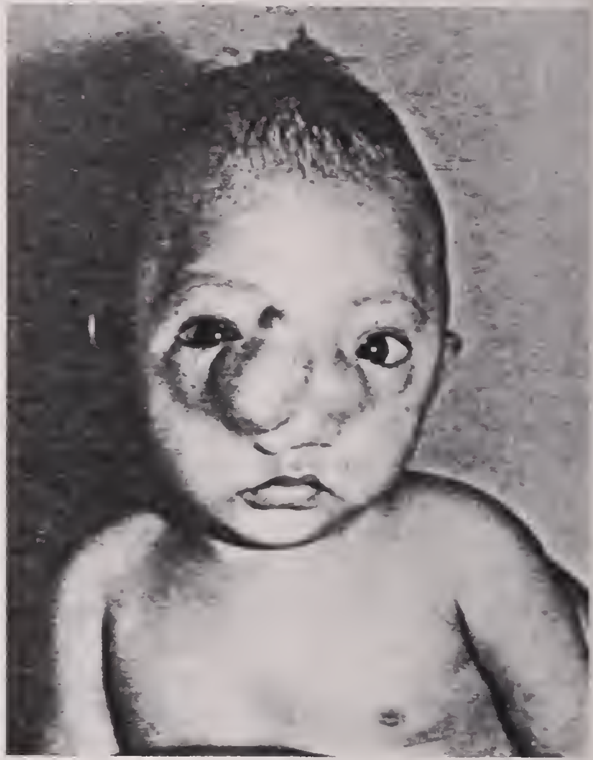


Fig. 4 - Preoperative facial views demonstrating the nasal encephalocele with the associated orbital deformities. (By permission)

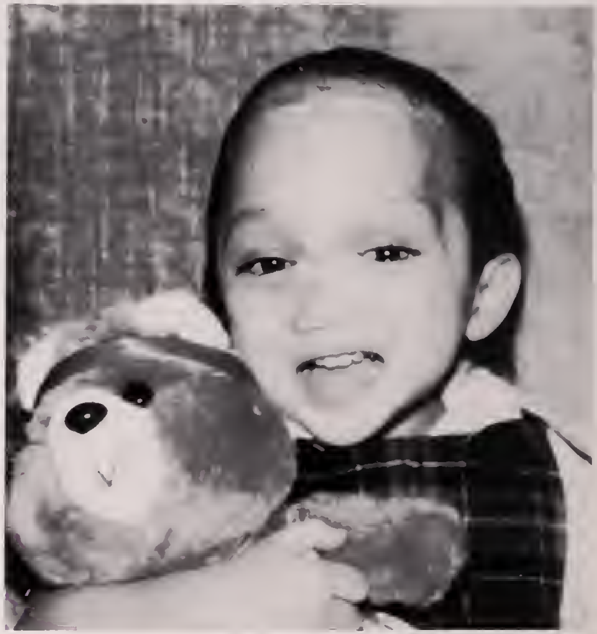
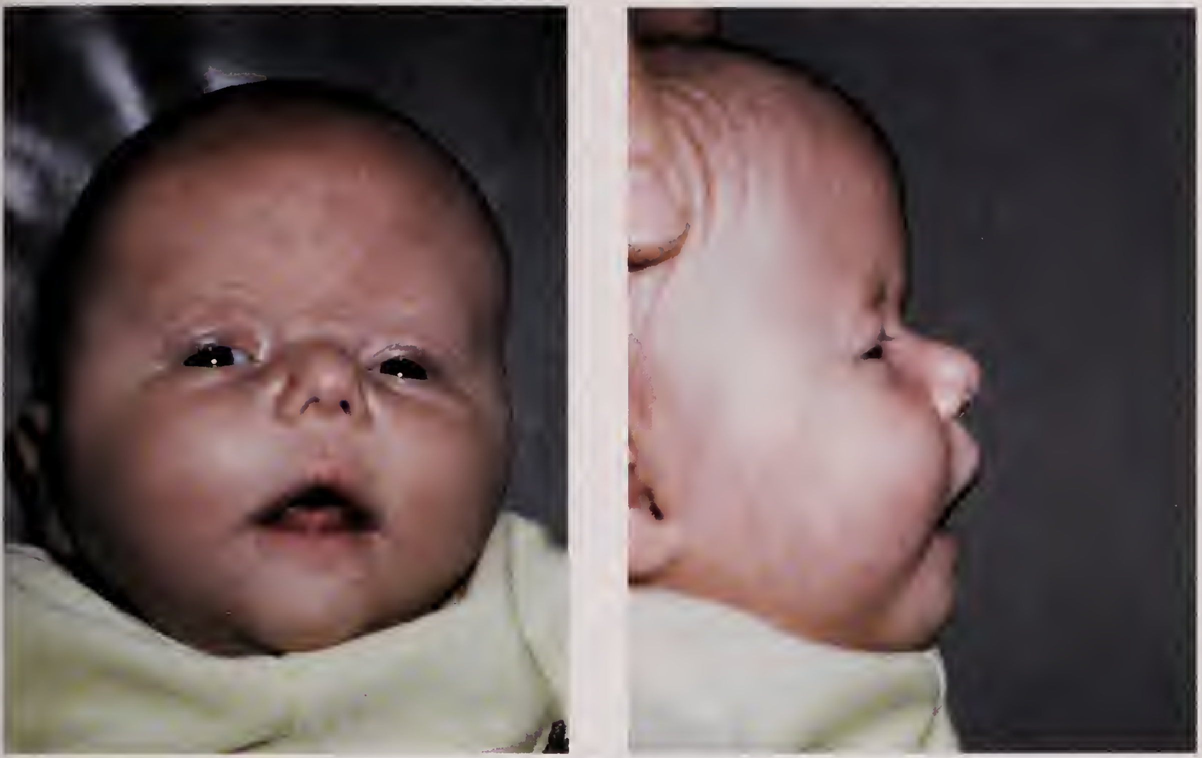


Fig. 5 - Postoperative facial views demonstrating an adequate cosmetic result obtained six months following surgery. (By permission)



Figs. 6(A-left) - 6(B-right) - Facial views demonstrating the midface hypoplasia characteristic of Apert's syndrome. (By permission)

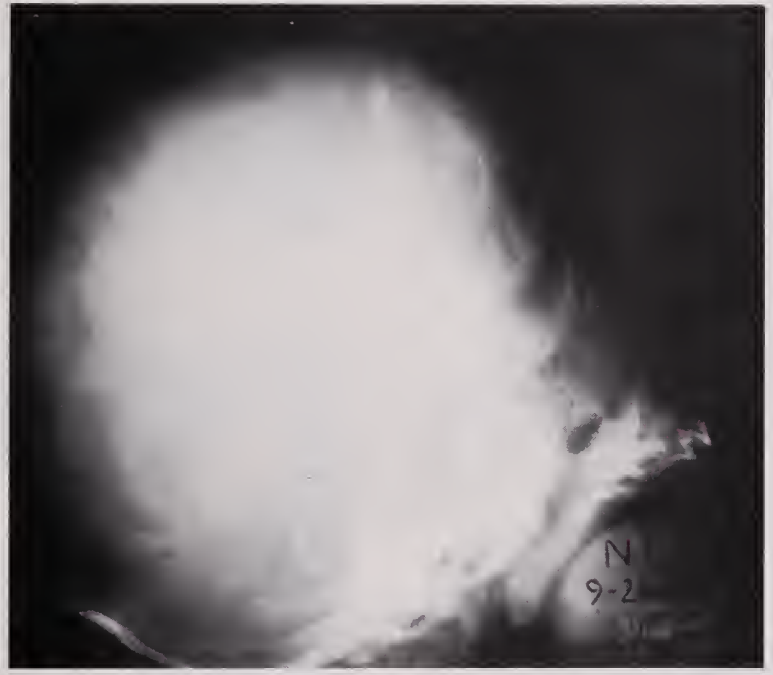
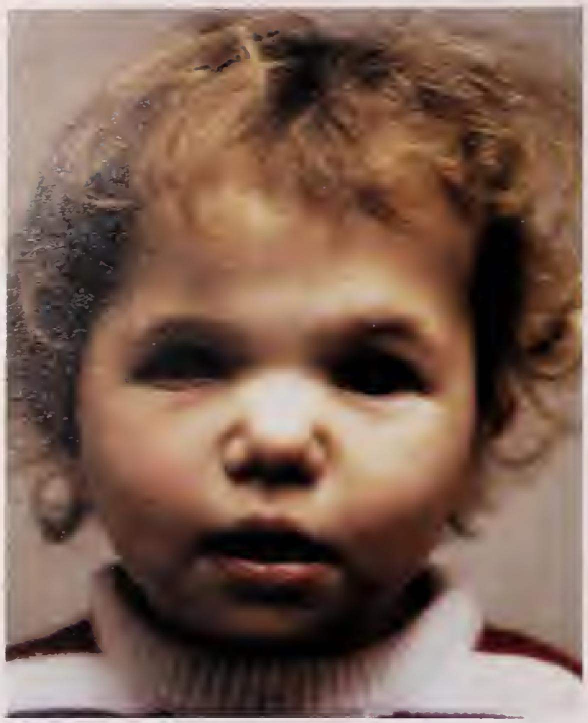
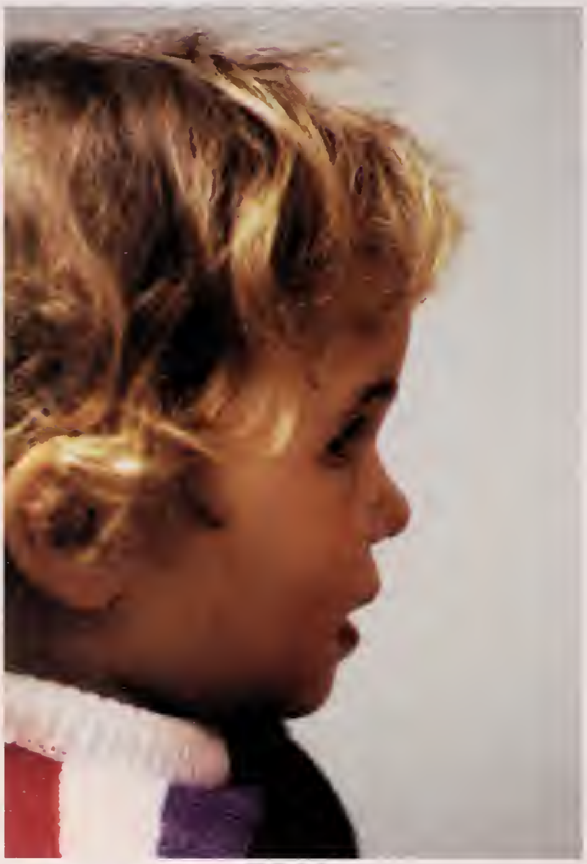


Fig. 7 - Preoperative lateral plain skull Xray demonstrating midface hypoplasia and bilateral coronal synostosis characteristic of Apert's syndrome. (By permission)





Figs. 8(A-top) - 8(B-bottom) - Postoperative facial views demonstrating adequate correction of the preoperative deformities. (By permission)

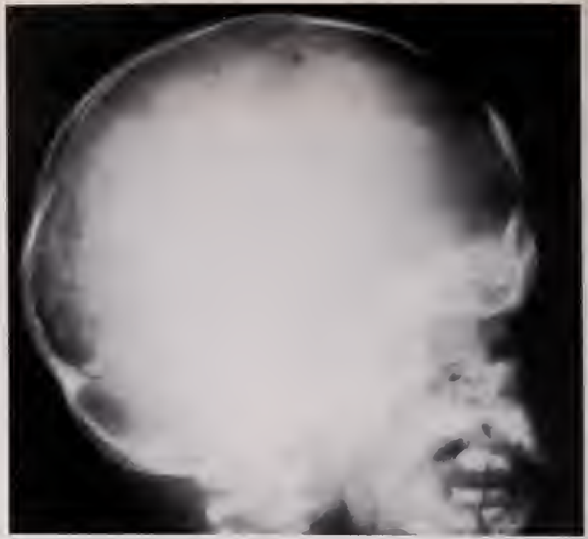


Fig. 9 - Postoperative lateral plain skull Xray demonstrating adequate resolution of the preoperative deformities. (By permission)

Fig. 10(A) - CT scan with 3D reconstructive techniques demonstrating a normal midface and forehead. (By permission)

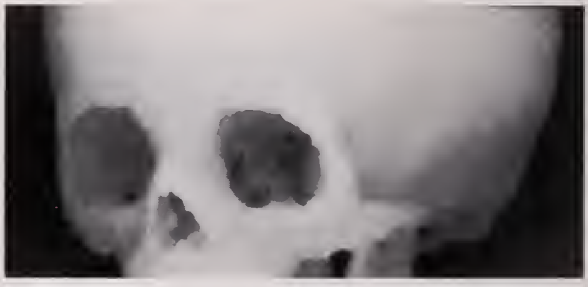


Fig. 10(B) - CT scan with 3D reconstructive techniques demonstrating a normal forehead and midface skeleton development. (By permission)

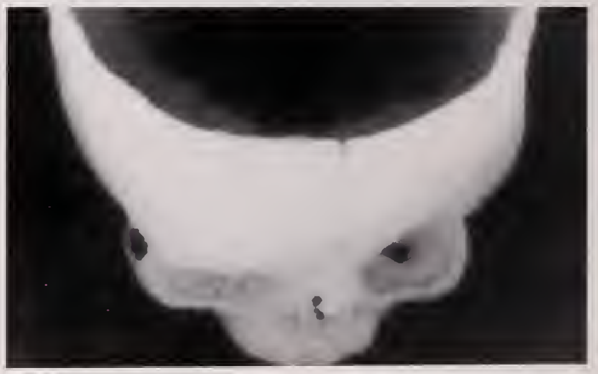


Fig. 10(C) - CT scan with 3D reconstructive techniques demonstrating a left side plagiocephaly (unilateral coronal synostosis). (By permission)

(Figures 1 (A) and Figure 1 (B)). The patient presented with plagiocephaly (unilateral coronal synostosis). He had a normal neurologic development and characteristic radiologic findings. Sclerosis of the right coronal suture (Figure 2), and the "harlequin" orbital deformity were clearly seen. Intracranial and extracranial correction of the right plagiocephaly with advancement of the right orbital rim, malar eminence and expansion of the anterior middle fossa was performed. On follow-up two years later, a satisfactory outcome was noticeable (Figures 3(A) and 3(B)).

Case 2 - Hypertelorism with Midline Facial Dysraphism (nasal encephalocele and pulsating exophthalmos)

This patient was 23 months old at the time of surgery. He was brought to medical attention at the age of six months with a nasal encephalocele and bilateral pulsating exophthalmos (Figure 4). Hydrocephalus was associated with the deformity. Following the insertion of a ventriculoperitoneal shunt (which had to be revised on two occasions due to malfunction) the child was scheduled for reconstructive craniofacial surgery.

An intracranial and extracranial repair was performed with reduction of the nasal encephalocele and reconstruction of the anterior fossa floor with a rib graft. Release of the sphenozygomatic sutures with elevation of the lateral orbital skeleton was accomplished. The frontal bone fragments were stabilized with a brace bar. At follow-up six months later, an adequate outcome was noted (Figure 5).

Case 3 - Apert's Syndrome

This child was first seen when seven weeks old. She presented facial features suggestive of Apert's syndrome (Figures 6(A) and 6(B)), characterized by bilateral coronal synostosis and midface hypoplasia (Figure 7). She was brought to surgery at nine weeks of age where a bilateral frontal craniotomy and release of the sphenozygomatic sutures were performed. In addition, an advancement of the brow, orbital rims and nasal skeleton was accomplished. Long term follow-up demonstrated an adequate outcome (Figure 8(A) and 8(B) and Figure 9).

Discussion

Craniofacial dysmorphic states have generally been recognized to be due to synostosis of the anterior fossa basal sutures; namely, the frontosphenoidal and frontoethmoidal sutures[2,6]. This interferes with the normal brain growth occurring during the first year of life, particularly the first six months. Enlow reported that during the first year, the brain and the ocular globe reach forty-five percent of the adult weight[1]. It appears natural then for the surgical effort to concentrate on the anterior fossa depth and orbital deformities[3,4,5].

An extensive preoperative evaluation of these children is imperative in order to precisely define the degree of surgical correction necessary and the presence of associated anomalies, hydrocephalus being not uncommon. Plain skull Xray, tomograms of the anterior fossa, and CT scan are included in the preoperative evaluation. Over the past year with the advent of reconstructive CT scan techniques, three dimensional imaging, have been obtained (Figures 10(A), 10(B) and 10(C)). These new features add more precision to the degree of deformity correction needed.

Conclusions

- **Early recognition and treatment of craniofacial dysmorphism yields favorable cosmetic results when performed within the first 12 months of life.**
- **Early recognition and treatment of accompanying hydrocephalus allows for an improved mental development.**
- **The addition of new radiological techniques allows better definitions of the deformity, anatomy, and the degree of surgical correction necessary.**

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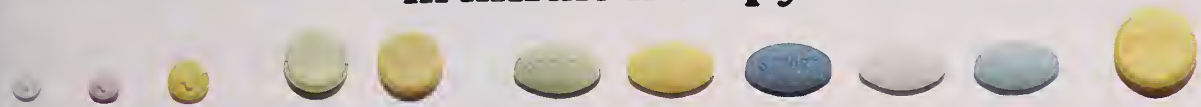

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Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

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Nursing Mothers: It is not known whether this drug is excreted in human milk Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon. Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2 5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg; and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended. The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

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Exploring the Normal Myelogram

An Historical Perspective

STEPHEN J. HAINES, M.D.* and
GERALD L. HAINES, M.D., Ph.D.†

Review of the literature and a personal series of patients suggests that patients with lumbar radiculopathy who undergo laminectomy despite a normal pantopaque myelogram have about a 50 percent chance of harboring a surgically treatable lesion.

It is a frequently stated clinical axiom that myelography is an adjunctive diagnostic test in patients with back and leg pain, to be undertaken only after the decision to operate has been made on clinical grounds, for the purpose of confirming the level of disc herniation, localizing multiple levels of herniation and ruling out the presence of a tumor mimicking disc disease.[9,23,26] When these guidelines are followed, one occasionally is put in the position of having a normal study in the face of one or another of the usual clinical indications for operation. In these instances, traditional clinical teaching favors surgical exploration, for there are many reasons why a single test may be at variance with clinical findings. Recent advances in diagnostic imaging appear to have greatly improved our ability to demonstrate lesions in the lower lumbar spinal canal, and a new philosophy in treating patients with normal studies and good clinical findings may develop. The purpose of this paper is to review the reported experience with surgical exploration following normal iophendylate (Pantopaque) myelography and assess the value of such exploratory operations. It is hoped that this will clarify the issues to be addressed when confronting similar situations in more completely studied patients.

Myelographic-Surgical Correlation

Table 1 shows the findings at surgery following normal myelography in 16 studies reported prior to the metrizamide era. In the studies by Begg, et al.[4] and Salenius and Laurent,[25] surgical findings of "intermittent disc prolapse" and "adhesions" were counted as negative explorations. If all these results are summed, omitting Scoville's[26] study for which the number of true negative myelograms is not available, and Ford's[9,10] first two studies which are included in the third, there are 527 negative myelograms with 278 (53 percent) positive explorations and 249 negative explorations.

Obviously, the interpretation of such numbers is quite difficult. The definition of positive and negative surgical findings is subjective and varies greatly among surgeons. The surgeon's prior knowledge of the patient and his desire to find a definitive cause for the patient's pain may influence his description of the findings. These factors should bias the results toward more positive explorations so that we may consider about 50 percent negative explorations to be a conservative estimate. Caution is necessary in interpreting this figure as well. This applies only to those patients with negative myelograms whose clinical syndromes are sufficiently severe or characteristic to induce their surgeons to operate. One should certainly not expect to find lesions in 50 percent of all patients with negative myelograms regardless of the clinical picture.

Reasons for False Negative Myelograms

A number of authors has tried to explain the rather high incidence of false negative myelograms documented above. Soule, Gross, and Irving[28] ascribed their five false negative studies to failure to

TABLE 1

Myelographic - Surgical Correlation

Author (Reference)	Contrast Year	#Normal Material	Surgical Myelograms	# (%) Positive Findings
Nosik[21]	1943	Thorotrast	9	1 (11)
Maltby & Pendergrass[20]	1946	Pantopaque	9	4 (44)
Kuhn & Neill[16]	1946	Pantopaque	19	9 (47)
Aitken & Bradford[2]	1947	Pantopaque	11	4 (36)
Begg, et al.[4]	1947	Pantopaque	7	2 (29)
Scoville, et al.[26]	1948	Pantopaque	?	? (75)
Rees & Donley[24]	1949	Pantopaque	7	4 (57)
Ford & Key[9]	1950	Pantopaque	39	27 (69)
Levy, et al.[18]	1951	Pantopaque	5	5 (100)
Friberg & Hult[11]	1951	Abrodil	62	33 (53)
Ford, et al.[10]	1952	Pantopaque	12	9 (75)
Lansche & Ford[17]	1960	Pantopaque	49	28 (57)
Hudgins[15]	1970	Pantopaque	52	26 (50)
Spangfort[27]	1972	Pantopaque	222	113 (51)
Wright, et al.[30]	1972	Pantopaque	25	13 (52)
Salenius & Laurent[25]	1977	Pantopaque	50	31 (62)

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appreciate one subtle defect, a narrow subarachnoid space in another, and unusually high termination of the subarachnoid space (above L5-S1) in three. Arbuckle, Shelden and Pudenz[3] defined the problem of the narrow subarachnoid space by noting that all of their patients in whom there were discrepancies between the myelogram and the surgical findings of a false negative nature had subarachnoid spaces 16 millimeters or less in width on the anteroposterior film. Maltby and Pendergrass[20] again emphasized the narrow subarachnoid space as a cause of falsely negative myelography. Echols and Rehfeldt[7] carefully analyzed 32 patients with sciatica upon whom they had operated and had not found a ruptured disc. In 18 patients they felt that they could identify a reasonable cause for the sciatica: bulging disc in eight, root adherent to disc in four, root compression by bony hypertrophy in four, spondylolisthesis in one, and congenital malformation of the dural sac in one. Most of these patients had not undergone myelography. In the five who had, the study was listed as positive. Ten of the 14 patients without a satisfactory explanation for their pain had undergone myelography, and all myelograms were normal. They recommended that this group of patients should have foraminotomies at the time of surgery if a disc lesion was not found. Daum et al.[6] ascribed three of their 11 false negative studies to narrow subarachnoid spaces, four to lateral disc protrusions, and four could not be explained. Gurdjian et al.[14] point out that nearly three quarters of their false negative myelograms occurred at the L5-S1 interspace and ascribed this to the relatively greater ratio of spinal canal width to subarachnoid space width at this level than at higher levels. MacNab's[19] analysis of 68 patients with negative exploration for herniated lumbar disc described several syndromes which can cause signs and symptoms of nerve root irritation which are not the result of typical disc herniation. Some of these (migration of a disc fragment into the intervertebral foramen, nerve root kinking by the pedicle, facet impingement on the nerve root and extra foraminal lateral disc herniation) may be compatible with negative myelography. Two of these syndromes (extreme lateral disc herniation[1] and the superior facet syndrome[8]) have been further defined subsequently.

As some of these syndromes have not been appreciated until recently, it seems likely that a number of early reports of "false negative" myelograms contain patients suffering from these problems, and their inclusion will bias the outcome of surgery in this group in an unfavorable way. It would be important for prospective studies to include a careful search for these problems during all surgical procedures.

Results of Negative Surgical Exploration

Several authors have reported their results in patients operated upon but in whom no significant lesion was found. Most authors classify these results approximately as follows: excellent refers to a patient who is pain free and has returned to his original work; good indicates a mild residual pain but continued ability to work; fair indicates a pain occasionally interfering with work and requiring the patient to avoid heavy work of any sort; and poor indicates pain unchanged or worse than preoperatively. This classification will be used in the following discussion except as noted.

Table 2 shows the results of surgery following normal myelography reported by a number of authors. Interpretation and comparison of these results is most difficult. The variation in the surgeon's definition of a negative exploration, the varying appreciation of various syndromes of root

TABLE 2
Results of Negative Surgical Exploration Following Normal Myelography

Author (Reference)	Year	Number of Operations	Classification of Result (n (%))			
			Excel	Good	Fair	Poor
Kuhn & Neill[16]	1946	25	3 (12)	-- 15	(60) --	7 (28)
Grant[13]	1946	29	14 (48)	0 (0)	8 (28)	7 (24)
Aitken & Bradford[2]	1947	67	2 (3)	7 (10)	17 (25)	41 (61)
Echols & Rehfeldt[7]	1949	14	6 (57)	-- 2	(14) --	6 (43)
Raaf & Berglund[23]	1949	8	3 (38)	3 (38)	0 (0)	2 (25)
Friberg & Hult[11]	1951	15	-- 9	(60) --	-- 6	(40) --
Raaf[22]	1959	?	(16)	(36)	(36)	(12)
Gottschalck & Hojgaard[12]	1962	37	6 (15)	13 (33)	11 (28)	7 (18)
MacNab[19]	1971	18	0 (0)	0 (0)	7 (39)	11 (61)
Spangfort[27]	1972	?	(38)	?	?	?
Watanabe, et al.[29]	1977	21	3 (10)	9 (30)	5 (17)	4 (13)

irritation compatible with the negative myelogram and the different degree of vigor with which the negative exploration may be pursued all conspire to cloud the issues. Summing all the studies in which excellent results can be separated from the rest[2,7,12,13,16,22,27,29] there were 39 excellent results in 222 patients (17 percent). In those studies in which poor results can be separated from the others[2,7,11,12,13,16,19,22,27,29] there are 95 poor results in 255 patients (37 percent).

Personal Data

During an evaluation of the results of surgical treatment of herniated lumbar discs by a single surgeon (GLH) over a period of 20 years, 20 patients were found who underwent exploration of a lumbar disc space following a normal iophendylate (Pantopaque) myelogram. Postoperative follow-up was obtained from office records and by a questionnaire mailed to each patient. Twelve patients (60 percent) responded to the questionnaire; follow-up assessments on the remainder were obtained from their medical records.

The outcome was classified as excellent if the patient had no pain, no restriction on activity and was able to continue in the same work and activities as preoperatively. A good result was scored for patients with occasional mild pain and some restrictions on the extremes of activity, but who were able to continue with their normal work. A fair outcome indicated that symptoms were somewhat better, but that pain interfered with normal daily activities and return to work had not been possible. A poor result indicated that symptoms were unchanged or worse.

The twenty patients had a median age of 42 years (range 21 to 59). The average length of follow-up was 12 months. Thirteen were men, seven women. Only one had undergone a prior surgical procedure on the back. The mean duration of preoperative pain was between one and two months, and this factor did not seem to have any association with outcome. All but one patient had leg pain in addition to back pain. The presence of subjective sensory changes did not appear to influence outcome, and there were no instances of subjective sphincter complaints.

Physical findings of muscle spasm, muscular atrophy and weakness, and the pattern of sensory loss had no relationship to outcome. Three patients had positive leg raising tests on the side of pain; two had a good result and one was fair. Three other patients had positive crossed straight leg raising; one had an excellent result, one was good and one poor.

Overall, four patients had excellent results, nine good, four fair and three poor. Thirteen of 20 (65 percent) could be said to have benefited from their operative procedure. At the time of surgery ten patients (50%) were found to have a free fragment herniated disc; one had an extreme lateral disc herniation; five had significant bulging of the disc, and one each was found to have lateral recess stenosis, epidural scarring, "softening" of the disc, and one exploration was completely negative. That patient had a good result. The finding of a free fragment disc herniation did not have any association with outcome.

In this small sample, only one factor, the type of operation required, was found to have a statistically significant association with outcome. Those patients who required more than a simple hemilaminectomy and discectomy (for example, the addition of a foramenotomy, partial facetectomy or, in one case, fusion) tended to have a poorer result (79 percent good to excellent versus 20 percent good to excellent, Fisher's exact test p.038). Patients below the median age of 42 years seemed to fare better (75 percent good to excellent results) than older patients (45 percent good to excellent), and those involved in compensation litigation (43 percent good to excellent) worse than those not involved (75 percent good to excellent).

Conclusion

When operation is undertaken in a patient with signs and symptoms suggestive of lumbar disc herniation who in addition has a normal Pantopaque myelogram, there is about a 50 percent chance of finding a lumbar disc lesion. These patients presumably have the same prognosis as those in whom the myelogram revealed the lesion preoperatively. In the remainder a careful search must be made for other causes of root compression as listed by MacNab[19]. This may improve the prognosis of this negative exploration group which is roughly approximated as 20 percent excellent results, 40 percent variable improvement, and 40 percent poor results. These conclusions are based on the number of studies using pantopaque myelography performed over many years. Increasing sophistication with the interpretation of myelograms plus the advent of metrizamide as a myelographic contrast medium, and the addition of CT scanning may well improve our ability to arrive at a diagnosis in patients whose pantopaque myelograms would have been negative. The occasional patient with a convincing clinical syndrome and normal radiographic studies will continue to present a problem. There is a need for careful study in the outcome of surgery in these patients.

Editorial Comment

Dr. Gerald L. Haines received his residency training at the University of Minnesota and received his Ph.D from the University of Minnesota, Minneapolis, in 1956.

Dr. Stephen J. Haines is the son of Dr. Gerald L. Haines and was born in Minneapolis. He took his general surgical residency at the University of Minnesota. He is currently Assistant Professor, Department of Neurosurgery, University of Minnesota.

Acknowledgment

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Preliminary Results of a Prospective Randomized Trial for Treatment of Severely Brain-Injured Patients with Hyperbaric Oxygen

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SANDRA E. FORD, R.N.*

There is considerable evidence that hyperbaric oxygen (HBO) reduces intracranial pressure by causing cerebral vasoconstriction and decreased cerebral blood flow while simultaneously supplying optimal amounts of oxygen for efficient cerebral aerobic glucose metabolism. The preliminary results of a prospective randomized clinical trail in a carefully defined group of patients with severe brain injuries treated with HBO are suggestive of a beneficial response. The rationale, protocol, and preliminary results of this ongoing study are presented.

Trauma remains the most common cause of death and disability between the ages of one and 40 years, as well as the overall fourth leading cause of death in the USA.[1]Statistics indicate that brain injuries are a major component of this mortality and morbidity. Despite significant advancements in the sophistication of neurological care, the mortality of seriously brain-injured patients remain between 30 and 50%.[2,3] In addition among the survivors, there is significant long term morbidity. A significant advancement in the definitive treatment for these patients would have obvious benefits.

Rationale for the Treatment of the Seriously Brain-Injured Patient with Hyperbaric Oxygen

Extensive experimental and clinical data suggest that hyperbaric oxygenation (HBO) may be effective in the treatment of brain injury. However, the treatment has never been subjected to a vigorous clinical study and has never gained widespread acceptance. In brief, HBO significantly increases the amount of oxygen dissolved in the plasma, an effect that is directly dependent on the applied absolute pressure of oxygen. It has been demonstrated that HBO decreases cerebral blood flow by causing cerebral vasoconstriction.[4] Both anoxia and increased cerebral blood flow aggravate cerebral edema in the traumatic brain. HBO serves to combat both of these factors by reducing cerebral blood flow, but at the same time compensating by supplying increased amounts of oxygen to the damaged cerebral tissue. Corresponding with the reduction of cerebral blood flow, secondary to cerebral vasoconstriction, there is a reduction of intracranial pressure.[4] That HBO restores more normal glucose metabolism in the brain is evidenced by a decrease in tissue acidosis and an increase in available energy which may help interrupt and prevent the development of cerebral edema.[5,6]

In 1974, a significant report on the use of HBO appeared in the German literature.[7]In this series, every other patient, out of a total group of 99 with a traumatic midbrain syndrome, was treated with HBO. Two comparable groups of patients resulted. The number of individual treatments varied between one to seven, depending on the individual patient response. In most of the cases, the treatment was performed between the second and tenth day of hospitalization. It was found that between the second and seventh days following the head injury, the mortality rate in the untreated group was 55%. In comparison, the HBO-treated group had a mortality rate of only 6%. The ultimate mortality in 64 patients with primary brain stem injuries was 33% in the treated group and 82% in the untreated group. In the patients with intracranial hemorrhage, the survival rate was 33% higher in treated patients compared with an untreated group. What is equally important to survival is the quality of long term survival. In this regard, 33% of the treated group made a complete recovery, while only 6% of the untreated group had the same result.

The HCMC is a regional center for hyperbaric medicine and has had extensive experience in experimental and clinical hyperbaric medicine over a 20-year period. In addition, the institution is a major receiving center for headinjured patients. There are over 600 patients a year with this diagnosis and approximately 10% of this group meet the criteria of severe head injury, that is, patients who are unable to utter recognizable words or follow commands. In view of the potential benefits of HBO in the treatment of severe head injury, it was felt that a very rigorous prospective randomized clinical trial would be indicated to truly assess the impact of the treatment within a carefully defined patient group.

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Experimental Design

Potential candidates for the study were all severely brain-injured patients involving all ages and defined as persisting unconsciousness with inability to obey commands or express recognizable words. Glasgow Coma Scale scores would equal less than 10. If a patient met these criteria, an informed consent for participation in the study was sought from a responsible relative. With consent, the patient was randomized to receive either our standard hospital treatment (control) regimen or the HBO treatment protocol. The only variable in the management of these patients was the administration of hyperbaric oxygen as described below.

Hyperbaric oxygen was instituted as soon as possible after the following: stabilization of the patient, CT head scanning, appropriate surgical evacuation of any mass lesion, and intracranial pressure monitoring. Every attempt was made to institute the first treatment within four hours of admission to the hospital. Hyperbaric oxygen treatments consisted of a 60-minute treatment at 1.5 ATA using 100% oxygen in a Sechrist Monoplace Chamber. Intracranial pressure monitoring, direct arterial blood pressure monitoring, central venous pressure, and EKG monitoring were all carried out routinely during treatment. If intracranial pressure was normal, HBO treatments were given every eight hours. If intracranial pressure was elevated greater than 15 mmHg, HBO was administered every four hours. Treatment was continued every four hours until intracranial pressure remained normalized for at least 48 hours. Treatment continued for two weeks or until the patient was declared to be brain dead or had recovered to a state of being alert and oriented.

Evaluation of the effect of the HBO treatment was made by comparing the control to the HBO treated group. Parameters which were systematically evaluated included intracranial pressure, serial neurological examinations, presence and evolution of various lesions on head CT scans, and multiple modality evoked responses including visual evoked responses (VER), brain stem auditory evoked responses (BAER), and somatic sensory evoked responses (SSER). Functional recovery was assessed in a blinded fashion by an independent neurologist, and patients were placed in the various categories of the Glasgow Recovery Scale.[8] In addition, formal follow-up independent neuropsychological testing was performed where possible at six, 12 and 18 months.

Preliminary Results

The initial 30 patients admitted into the study have been reviewed by overall outcome. The mortality rate in the less severely injured patients, i.e. Glasgow Coma Scale 7, 8 and 9, show no apparent difference. Ten of the 11 patients survived. All four patients with a Glasgow Coma Scale score of three expired, which included two controls and two HBO treated. Based upon our past experience of a 90 to 95% mortality rate in this group, it is doubtful that any treatment will have a significant impact in these severely injured cases. However, if one considers only the patients with a Glasgow Coma Scale of four to six (Table), the data does suggest increased survival with hyperbaric oxygen treatment. The p value of .100 indicates that if the hyperbaric treatment really had no benefit, there would be about one chance in ten for the occurrence of an improved survival as good as that observed. Obviously, the numbers are small and the results are quite preliminary. However, based on these findings and our past clinical experience, we would anticipate an effective treatment to impact the survival of patients in this Glasgow Coma Scale group of four, five, six, and possibly seven. It is obvious that functional recovery is equally important or perhaps more important than survival. All patients have been followed for at least three months. Of the group of eight surviving patients noted in the Table, six have achieved a good result (i.e. good recovery or mild to moderate disability) as determined by their Glasgow Recovery Scale.[8] It is anticipated than an improved rate of survival will result in more functional individuals.

TABLE
Comparison of Mortality in Severe Head Injuries
(Glasgow Coma Scale 4-6)
Treated with Hyperbaric Oxygen Versus Control

	Survive	Die	Total
HBO	6	2	8
Control	2	5	7
Total	8	7	15

One-tailed Fisher's exact
p .100

Conclusion

Based on the experience in the literature cited previously and on our own initial experience, we hope in the future to convincingly demonstrate that the treatment of severe brain-injured patients with HBO will result in an overall beneficial response in terms of long term functional recovery and decreased mortality rate. Completion of this clinical trial will hopefully demonstrate whether the treatment of head-injured patients with HBO should be pursued further.

Acknowledgment

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(Continued on page 564)

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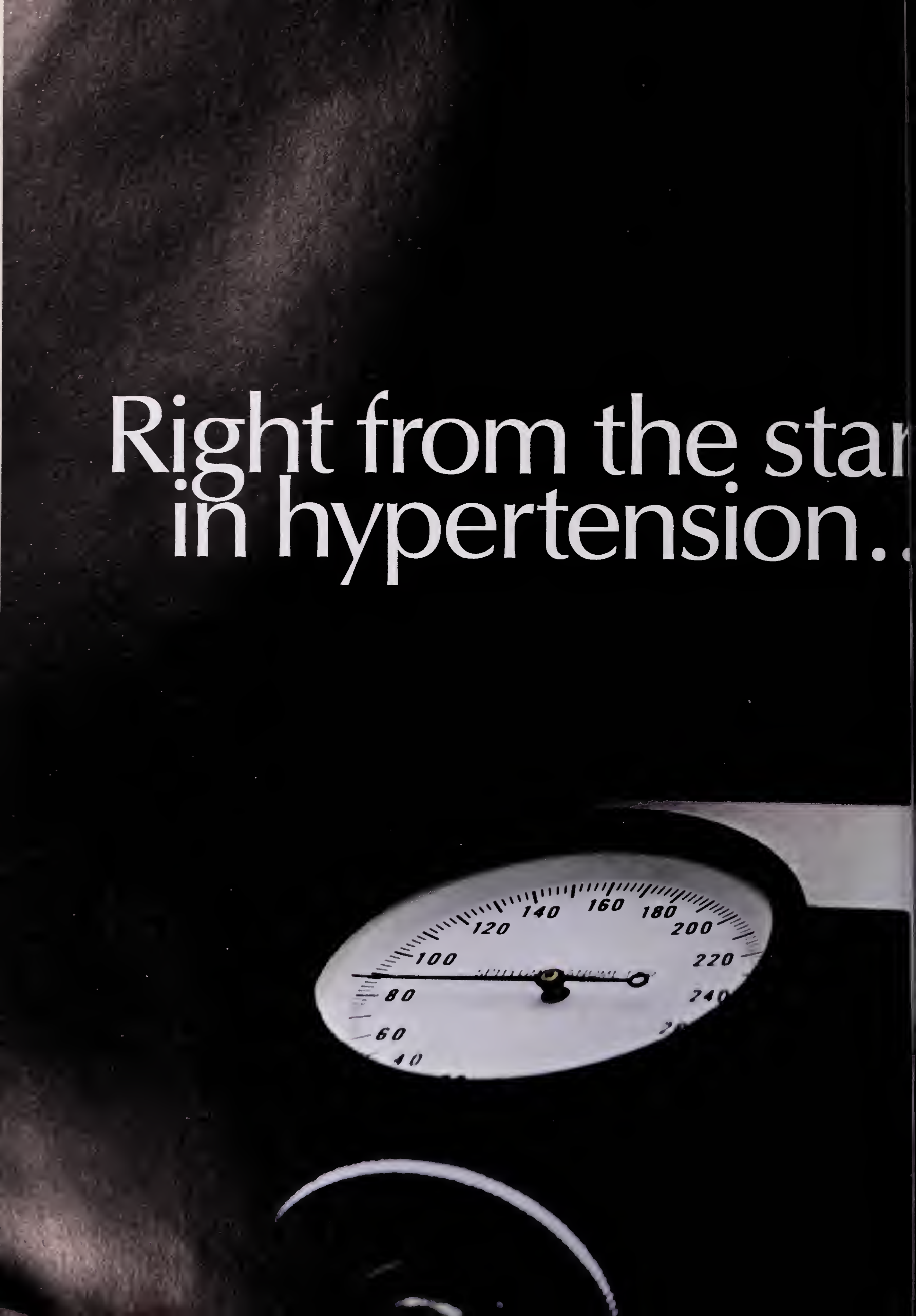
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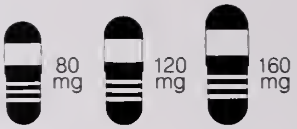

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INDERAL LA should not be considered a simple mg for mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose When changing to INDERAL LA from conventional propranolol a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval In most clinical settings, however, such as hypertension or angina where there is little correlation between plasma levels and clinical effect INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate systolic pressure and rate pressure product INDERAL LA can provide effective beta blockade for a 24-hour period

The mechanism of the antihypertensive effect of INDERAL has not been established Among the factors that may be involved in contributing to the antihypertensive action are (1) decreased cardiac output (2) inhibition of renin release by the kidneys and (3) diminution of tonic sympathetic nerve outflow from vasomotor centers in the brain Although total peripheral resistance may increase initially it readjusts to or below the pretreatment level with chronic use Effects on plasma volume appear to be minor and somewhat variable INDERAL has been shown to cause a small increase in serum potassium concentration when used in the treatment of hypertensive patients

In angina pectoris propranolol generally reduces the oxygen requirement of the heart at any given level of effort by blocking the catecholamine-induced increases in the heart rate, systolic blood pressure and the velocity and extent of myocardial contraction Propranolol may increase oxygen requirements by increasing left ventricular fiber length end diastolic pressure and systolic ejection period The net physiologic effect of beta-adrenergic blockade is usually advantageous and is manifested during exercise by delayed onset of pain and increased work capacity

In dosages greater than required for beta blockade INDERAL also exerts a quinidine-like or anesthetic-like membrane action which affects the cardiac action potential The significance of the membrane action in the treatment of arrhythmias is uncertain

The mechanism of the antimigraine effect of propranolol has not been established Beta-adrenergic receptors have been demonstrated in the pial vessels of the brain

Beta receptor blockade can be useful in conditions in which because of pathologic or functional changes, sympathetic activity is detrimental to the patient But there are also situations in which sympathetic stimulation is vital For example in patients with severely damaged hearts adequate ventricular function is maintained by virtue of sympathetic drive which should be preserved In the presence of AV block greater than first degree beta blockade may prevent the necessary facilitating effect of sympathetic activity on conduction Beta blockade results in bronchial constriction by interfering with adrenergic bronchodilator activity which should be preserved in patients subject to bronchospasm.

Propranolol is not significantly dialyzable

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension it may be used alone or used in combination with other antihypertensive agents, particularly a thiazide diuretic INDERAL LA is not indicated in the management of hypertensive emergencies.

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris

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Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis, especially for treatment of exertional or other stress-induced angina palpitations, and syncope INDERAL LA also improves exercise performance The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation Clinical improvement may be temporary

CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock 2) sinus bradycardia and greater than first degree block 3) bronchial asthma 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL

WARNINGS. CARDIAC FAILURE Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure and its inhibition by beta blockade may precipitate more severe failure Although beta blockers should be avoided in overt congestive heart failure if necessary, they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE continued use of beta blockers can in some cases, lead to cardiac failure Therefore at the first sign or symptom of heart failure the patient should be digitalized and/or treated with diuretics, and the response observed closely or INDERAL should be discontinued (gradually, if possible)

> IN PATIENTS WITH ANGINA PECTORIS there have been reports of exacerbation of angina and in some cases myocardial infarction following abrupt discontinuance of INDERAL therapy Therefore when discontinuance of INDERAL is planned the dosage should be gradually reduced over at least a few weeks and the patient should be cautioned against interruption or cessation of therapy without the physician's advice If INDERAL therapy is interrupted and exacerbation of angina occurs, it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris Since coronary artery disease may be unrecognized, it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications

Nonallergic Bronchospasm (e.g., chronic bronchitis, emphysema)— PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors

MAJOR SURGERY The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial It should be noted however that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures

INDERAL (propranolol HCl), like other beta blockers, is a competitive inhibitor o receptor agonists and its effects can be reversed by administration of such agen dobutamine or isoproterenol However such patients may be subject to protracted hypotension Difficulty in starting and maintaining the heartbeat has also been reporte beta blockers

DIABETES AND HYPOGLYCEMIA Beta-adrenergic blockade may prevent pearance of certain premonitory signs and symptoms (pulse rate and pressure chan acute hypoglycemia in labile insulin-dependent diabetes In these patients, it may b difficult to adjust the dosage of insulin

THYROTOXICOSIS Beta blockade may mask certain clinical signs of hyperthy Therefore abrupt withdrawal of propranolol may be followed by an exacerbation of sym of hyperthyroidism including thyroid storm Propranolol does not distort thyroid functio

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME, several cases hav reported in which, after propranolol, the tachycardia was replaced by a severe brady requiring a demand pacemaker In one case this resulted after an initial dose o propranolol

PRECAUTIONS. *General* Propranolol should be used with caution in patients with m hepatic or renal function. INDERAL (propranolol HCl) is not indicated for the treat hypertensive emergencies

Beta adrenoreceptor blockade can cause reduction of intraocular pressure P should be told that INDERAL may interfere with the glaucoma screening test Withdraw lead to a return of increased intraocular pressure

Clinical Laboratory Tests Elevated blood urea levels in patients with severe heart d elevated serum transaminase, alkaline phosphatase, lactate dehydrogenase

DRUG INTERACTIONS Patients receiving catecholamine-depleting drugs such as pine should be closely observed if INDERAL is administered The added catecho blocking action may produce an excessive reduction of resting sympathetic nervous which may result in hypotension, marked bradycardia, vertigo, syncopal attacks, or orth hypotension

Carcinogenesis, Mutagenesis, Impairment of Fertility Long-term studies in anima been conducted to evaluate toxic effects and carcinogenic potential In 18-month st both rats and mice employing doses up to 150 mg/kg/day, there was no evidence of sig drug-induced toxicity There were no drug-related tumorigenic effects at any of the levels Reproductive studies in animals did not show any impairment of fertility tha attributable to the drug

Pregnancy Pregnancy Category C INDERAL has been shown to be embryot animal studies at doses about 10 times greater than the maximum recommended human

There are no adequate and well-controlled studies in pregnant women INDERAL be used during pregnancy only if the potential benefit justifies the potential risk to the

Nursing Mothers INDERAL is excreted in human milk Caution should be exercised INDERAL is administered to a nursing woman

Pediatric Use Safety and effectiveness in children have not been established

ADVERSE REACTIONS. Most adverse effects have been mild and transient and rarely required the withdrawal of therapy

Cardiovascular bradycardia congestive heart failure intensification of AV block tension, paresthesia of hands, thrombocytopenic purpura arterial insufficiency, usua Raynaud type

Central Nervous System lightheadedness, mental depression manifested by ins lassitude weakness fatigue reversible mental depression progressing to catatonia disturbances hallucinations, an acute reversible syndrome characterized by disorienta time and place short-term memory loss, emotional lability slightly clouded sensor decreased performance on neuropsychometrics

Gastrointestinal nausea, vomiting epigastric distress abdominal cramping di constipation mesenteric arterial thrombosis, ischemic colitis

Allergic pharyngitis and agranulocytosis, erythematous rash, fever combined with a and sore throat laryngospasm and respiratory distress

Respiratory bronchospasm

Hematologic agranulocytosis, nonthrombocytopenic purpura thrombocyto purpura

Auto-Immune In extremely rare instances, systemic lupus erythematosus has reported

Miscellaneous alopecia, LE-like reactions, psoriasiform rashes, dry eyes male tence and Peyronie's disease have been reported rarely Oculomucocutaneous rea involving the skin, serous membranes and conjunctivae reported for a beta blocker (pra have not been associated with propranolol

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hydrochlori sustained-release capsule for administration once daily If patients are switched from IND tablets to INDERAL LA capsules, care should be taken to assure that the desired thera effect is maintained INDERAL LA should not be considered a simple mg for mg subs INDERAL INDERAL LA has different kinetics and produces lower blood levels Retitrati be necessary especially to maintain effectiveness at the end of the 24-hour dosing

HYPERTENSION—*Dosage must be individualized* The usual initial dosage is 8 INDERAL LA once daily whether used alone or added to a diuretic The dosage m increased to 120 mg once daily or higher until adequate blood pressure control is ach The usual maintenance dosage is 120 to 160 mg once daily In some instances a dosage mg may be required The time needed for full hypertensive response to a given dosa variable and may range from a few days to several weeks

ANGINA PECTORIS—*Dosage must be individualized* Starting with 80 mg INDER once daily, dosage should be gradually increased at three to seven day intervals unti o response is obtained Although individual patients may respond at any dosage leve average optimum dosage appears to be 160 mg once daily In angina pectoris the va safety of dosage exceeding 320 mg per day have not been established

If treatment is to be discontinued reduce dosage gradually over a period of a few (see WARNINGS)

MIGRAINE—*Dosage must be individualized* The initial oral dose is 80 mg INDER once daily The usual effective dose range is 160-240 mg once daily The dosage m increased gradually to achieve optimum migraine prophylaxis If a satisfactory response obtained within four to six weeks after reaching the maximum dose, INDERAL LA the should be discontinued It may be advisable to withdraw the drug gradually over a pe several weeks

HYPERTROPHIC SUBAORTIC STENOSIS—80-160 mg INDERAL LA once daily

PEDIATRIC DOSAGE—At this time the data on the use of the drug in this age group a limited to permit adequate directions for use

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Neurosurgical Management of Selected Parasitic Diseases of the Western Hemisphere

HUMBERTO J. ORTIZ-SUAREZ, M.D., Ph.D.*

The general medical and neurosurgical principles involved in the management of two common parasitic diseases of the Western Hemisphere are discussed. Cysticercosis with predominant cerebral involvement and schistosomiasis with predominant spinal cord changes were selected to illustrate the main features of this group of diseases.

Parasitic diseases are very common, particularly in the third world. The involvement of the nervous system in the parasitosis occurs via hematogenous dissemination from the primary region of involvement. The correct preoperative diagnosis is not difficult in endemic areas or in areas of developed countries with large immigrant populations where the index of suspicion is high. Yet in most regions of the United States the diagnosis is frequently not made prior to operation.

There are certain situations which should suggest to the physician the possibility of parasitic disease in a patient undergoing diagnostic workup for a central nervous system lesion. The immunoguppressed patient, whether from disease such as "AIDS", a lymphoproliferative disorder, or from the treatment of other conditions with corticosteroids or immunosuppressants, if exposed, is at a very high risk of acquiring a parasitic disorder. In addition, if on computed tomography of the brain, one notes a cystic cerebral mass lesion, with or without adjacent calcification, one should again be suspicious regarding the possibility of parasitic disease. This is particularly true if CT guided stereotaxic biopsy is being considered because of the risk of spillage and CSF contamination from the parasitic cyst.

In general terms, the treatment of central nervous system parasitic infections will require the correct diagnosis, removal of significant mass lesions and prolonged systemic chemotherapy, utilizing an agent effective against the specific organism. Currently, new drugs are being developed, and among the most effective seems to be Praziquantel (Biltricide®). The long term prognosis in these cases will depend not only on drug effectiveness, but on the degree of nervous tissue damage that preceded the diagnosis and treatment. The nutritional and immunologic status are important factors in the patient's long term outlook.

During surgical procedures in these patients, extreme care must be taken to avoid spillage of the cyst contents on the unprotected brain or subarachnoid space, since this compounds disease management. When the operative specimen is submitted for examination, the pathologist should be advised that parasitic disease is being considered. This will permit adequate examination of the tissues, including serial sections of the cyst wall and its contents.

Parasitic diseases which may require neurosurgical intervention include cysticercosis, echinococcosis, schistosomiasis, paragonimiasis, amebiasis, toxoplasmosis, and coenurosis. All of these entities may give rise to cerebral involvement; the first four may, in addition, give rise to spinal involvement. Among the most frequently encountered are cysticercosis and schistosomiasis.

Cysticercosis

This is the most common parasitosis affecting the nervous system. The disease is caused by the larval form (cysticercus cellulosa) of the pork tapeworm (taenia solium). In the Western Hemisphere it is found most frequently in Mexico and South America. Upon reaching the nervous system the parasite may localize in the brain parenchyma, the subarachnoid space, or the ventricular system, through the choroid plexus, or finally in a combination of sites. Parenchymal lesions may be single or multiple, and are usually rounded soft tissue masses or cystic lesions. With time, the lesions may calcify, usually in a spherical manner with an eccentric nodular calcification within the scolex. In the cases of meningobasal or intraventricular localization, the predominant pathological finding and clinical presentation is that of hydrocephalus, in addition ventriculitis or ependimytis may be present.

The treatment of uncomplicated cases can be with Praziquantel, at a daily dosage of 50 mgm/Kg., in three divided doses for 15 days. If cerebral edema is present, corticosteroids can be given concurrently. Treatment may be repeated in one or two months.

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Large single cystic lesions associated with a decreased level of consciousness or signs of impending herniation are best handled surgically. Preoperative preparation should include steroids. The surgical approach is planned, utilizing the CT scan in order to reach the lesion through the most direct route, to avoid important cortical areas. Intraoperatively, the lesion can be localized utilizing ultrasound or by gentle palpation with a blunt cannula. Every attempt should be made to deliver the cyst intact, without rupture, while at the same time avoiding undue stretching of the cortex.

A second group of patients coming to the neurosurgeon's attention are those presenting with intracranial hypertension without hemispheric findings or with a dementing process. The cranial CT scan separates this group into two subsets: one with pseudotumor cerebri in which one notes a small compressed ventricular system with diffuse parenchymal swelling and a second subset with hydrocephalus. The former can be best treated with Praziquantel and steroids. The latter usually needs in most cases further diagnostic testing to establish the etiology of the hydrocephalus and thereby appropriate treatment. In most patients with hydrocephalus due to neurocysticercosis there will be evident either the racemose, basomenigeal cysticercosis or there will be evident an intraventricular cyst. Initial treatment of these patients may be carried out by a shunting procedure, and if a question of intraventricular cyst exists an intraoperative (transvalvular) ventriculogram is done to better visualize the ventricular system. If an intraventricular cyst is identified, surgical removal should be considered for various reasons. The cyst can cause ventriculitis, or develop adherence to adjacent cerebral tissue and cause progressive symptoms. It is also less likely that Praziquantel or a similar agent will cause the resolution of these circumscribed lesions.

A third and smaller group of patients with neurocysticercosis will come to neurosurgical attention with a clinical picture of progressive paraparesis. Pathologically the lesion may be intramedullary, usually via hematogenous spread or more commonly leptomeningeal, that is extramedullary, intradural with seeding via the cerebrospinal fluid. In this situation, the cerebrospinal fluid may show a mononuclear pleocytosis, elevated protein, and eosinophilia on Wright's stain. Myelography will usually confirm the location of the lesion, usually in the thoracic region. Praziquantel and steroids may be tried if the myelographic block is not complete and the clinical evolution is slow, otherwise surgical decompression is the treatment of choice with laminectomy and removal of the lesion.

Schistosomiasis

This group of diseases is usually acquired by coming in contact with infected waters. The cercaria after leaving the snail, the intermediate host, may penetrate even through the intact skin. In the Far East, the organism is usually Schistosoma Japonicum whose small eggs are more prone to cause cerebral involvement. In North Africa, the organism is Schistosoma Hematobium and in South America and the Antilles Schistosoma Mansoni, the latter two being the more likely to involve the spinal cord via Batson's epidural venous plexus. In all schistosomiasis, the adult worms remain in the intestinal or urinary bladder venous systems and the eggs then migrate to the nervous system where a granulomatous or acute inflammatory lesion may result. The granulomas may evolve as a mass lesion in the brain or spinal cord and thereby cause a focal deficit by compression of surrounding adjacent neural tissue.

A diagnosis in schistosomiasis is made by the history of exposure in an endemic region, the finding of eggs in the stool or urine, a clinical presentation compatible with neuroschistosomiasis, and finally by immunologic testing of which the circumoval precipitin test is the most accurate of blood or spinal fluid.

Medical treatment may be with Praziquantel or Oxamniquine (Vancil^R). Corticosteroids help to reduce the inflammatory reaction and edema associated with the lesion.

In the Western Hemisphere, the neurosurgeon will be called to manage spinal schistosomiasis more frequently than cerebral schistosomiasis. The most common localization of the spinal schistosomal granuloma is the conus medullaris. Symptomatology includes bilateral lower extremity pain and weakness, with bladder and rectal sphincter involvement. Straight leg raising tests are usually positive; the ankle reflexes are absent, while the patellar reflexes are preserved, and the rectal sphincter is lax with an absent bulbocavernosus reflex. The cerebrospinal fluid frequently shows a mononuclear pleocytosis, with 100 to 200 cells per cubic millimeter. CSF protein is usually elevated to about 150 milligrams per cent. A myelographic study may be normal or show widening of the conus medullaris. Occasionally a myelographic block is present. Treatment with corticosteroids and Oxamniquine suffices in most cases. The prognosis is good for return of motor function, but only fair for full return of conus and sphincter function. If a complete myelographic block is present and neurological deterioration is progressing, decompressive laminectomy with dural grafting may be of help. Biopsy of the enlarged conus should be avoided if the diagnosis of schistosomiasis is established or evident. Biopsy of whitish granular lesions in the piarachnoid of the nerve roots or posterior cord surface may provide the diagnosis.

MANAGEMENT OF ANEURYSMS OF THE ANTERIOR COMMUNICATING ARTERY

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1. A series of 25 patients treated consecutively with a specific surgical technique for aneurysms of the anterior communicating artery is presented.

2. A method for the exposure of aneurysms involving the anterior communicating artery by means of wedge resection of the frontal lobe together with the use of hypotensive techniques in anesthesia is described.

3. One patient expired in the immediate postoperative period and there is a postoperative morbidity of approximately 15 per cent. Of the 25 patients, 17 are now working.

4. Surgical treatment of aneurysms in this location certainly offers a distinct advantage to the patient over nonoperative management.

This major article, appearing in the Journal of Neurosurgery in 1962 (JNS 19:870-876), is one of Dr. French's several major contributions to neurological surgery. Prior to its publication, the results of direct approaches upon aneurysms of the anterior communicating artery were frought with major complications, significant morbidity, and a high mortality. In view of these unfavorable outcomes, many authors of the time advocated expectant treatment or at most surgical carotid ligation or wrapping of the aneurysm. This consecutive series of 25 patients, in which the ACA aneurysm was directly approached and obliterated, reported a major improvement in the surgical end results over previously reported series. It demonstrated that a direct aneurysmal approach was feasible, but more importantly, a therapy with a reasonable expectation of favorable outcome; especially when viewed in the context of the record of prior nonoperative and operative forms of therapy. Over subsequent years, direct techniques have been further refined, along with improvements in visualization and micro-instrumentation, making a direct surgical approach in the treatment of most intracranial aneurysms, the current day standard of treatment.

Steroid Hormone Receptors in Human Meningiomas
A Look at the Past, Present and the Future

SCOTT SCHLESINGER and WARREN BOOP, M.D., M.S.+

Identification of estrogen and progesterone receptors in meningiomas is still a somewhat controversial issue. If present, these receptors may play a role in controlling tumor growth; hormonal manipulation could then be used as possible adjunctive therapy for persisting or recurrent tumor.

Two thirds of all meningiomas occur in females. More than fifty years ago Cushing and Eisenhardt observed that meningiomas frequently became symptomatic during pregnancy. Since that time, several authors have reported cases of meningiomas which became symptomatic during pregnancy, only to become symptom free after delivery. In 1958, Bickerstaff et al.[1] reported two cases of patients with the onset of occulomotor palsies and scotomata during pregnancy, who subsequently were found to have meningiomas in the sellar area. Subsequent studies have confirmed that meningiomas do undergo enlargement during the luteal phase of the menstrual cycle and during pregnancy.

Shoenberg et al.[2] in 1975 reported that the incidence of meningiomas in patients with breast cancer was twice that in the general population. In searching for an explanation for these unique clinical observations, Donnell et al.[3] in 1979 demonstrated the presence of estrogen receptors in four of six meningiomas examined. Since that time, numerous authors have reported studies, often with conflicting results, concerning the presence of estrogen and progesterone receptors in these common cerebral tumors.

Action of Steroid Hormones

Steroid hormones are thought to be bound by non-specific serum binding proteins which then transport the steroid hormone to the target cells. Within the target cells are cytoplasmic receptors which are specific for each type of steroid hormone: estrogen, androgen, progesterone, and glucocorticoids. Upon binding their specific hormone, the receptor-hormone complex becomes "activated" and is translocated into the nucleus, where it will bind to DNA at specific acceptor sites. The final effect is the induction of transcription of DNA with its resultant protein synthesis. To be considered a "true" hormone receptor the suspected hormone receptor must satisfy the following requirements: high affinity, finite binding capacity, hormone specificity, tissue specificity, and correlation with biological response.[4]

If steroid hormone receptors are present within meningiomas and if they play an important role in controlling tumor growth, one may then suppose hormonal manipulation might be adapted as an adjunctive therapy for recurrent or incompletely removed tumors. Knowledge of the presence and concentrations of estrogen and progesterone receptors in breast cancer cytosol has been very useful in predicting response to endocrine therapy in the metastatic form of this disease.[5] Hormonal manipulation has been quite useful in the clinical management of certain cases of breast and prostate carcinoma. Before contemplating widespread clinical trials using hormonal manipulation in meningioma patients, the presence of estrogen and progesterone receptors needs confirmation.

Since the first published report of estrogen receptors in meningiomas by Donnell et al. in 1979, there have been a number of studies conducted in this country and elsewhere. The results have been variable and often conflicting. In every series reviewed by Cahill et al.[6], progesterone receptors were more frequently demonstrated than estrogen receptors; furthermore, progesterone receptor levels had been quantitatively higher in women. In addition and in all of these series, estrogen receptor levels have been frequently near the level of significance and well below the levels that have been found to correlate with hormonal responsiveness in breast carcinoma.

Recently, Schwartz et al.[5] have challenged the previous studies' findings of steroid hormone "receptors." Their studies of 26 meningioma patients demonstrated estrogen binding proteins in eight patients and progesterone binding proteins in 18 patients; but, in contradistinction to other earlier

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studies, the binding proteins were found to be nonspecific by competitive analysis techniques. Several of the previous studies to date have also tested the steroid binding proteins for specificity; the results indicate a specific binding and thus allow classification as receptors, assuming the other criteria have been satisfied. The factuality of this issue is, as of now, unclear.

There are a number of possible explanations for the wide discrepancies in studies to date, which include differing units of measurement, criteria for positivity, and the perioperative use of glucocorticoids. Magdelenat et al.[3] studied 41 patients with meningiomas, 13 of whom received preoperative glucocorticoids. Ten of the 12 had lower progesterone receptor levels than the mean group value. Yu et al.[7] demonstrated the presence of glucocorticoid receptors in six out of six meningiomas.

Clearly, a well controlled study of meningiomas needs to be designed which will take into consideration the previously mentioned variables, but in addition: (1) the concomitant assay of a serum marker, such as albumin, to detect the possible level of serum contamination by the serum steroid binding proteins, (2) a careful correlation of histologic type and tumor location with receptor levels, (3) a preoperative measurement of plasma albumin, estradiol, progesterone and testosterone, (4) and a reliable technique for determining specificity of hormone binding proteins.

The clinical need for an effective adjuvant therapeutic agent is clear. The future is open to further studies of meningiomas in an effort to confirm the presence of hormone receptors and, if confirmed, to clinical trials using antiestrogens and/or antiprogestins. Further development of techniques to study meningioma immunohistochemistry and histochemistry such as the 1983 study published by Hinton et al.[8] is clearly needed. Using fluorceinated estradiol and rhodamine-conjugated progesterone they found a good correlation between biochemical assays and immunohistochemical results, further re-enforcing the concept of steroid hormone receptors in meningiomas.

Possible Use of Anti-estrogens and Anti-progestins

Several studies have shown that estrogens may induce progesterone receptor production in target tissues[9]. Assayed levels of progesterone receptor in breast and endometrial cancers are directly proportional to the level of circulating estrogen, while in prostatic carcinoma they are directly proportional to circulating androgen level. A clear relationship between plasma steroidsestrogens, androgens and progesterone and meningiomas has yet to be defined. Yu et al.[9] demonstrated a direct relationship between estrogen receptor level and progesterone level in meningiomas of female patients. To date, however, in the many cases studied, estrogen receptor activity has been negative, while progesterone receptor activity was positive, and in almost all cases the progesterone receptor level was quantitatively much higher than estrogen receptor. Since meningiomas are not known to enlarge during the proliferative phase of the menstrual cycle or with exogenous estrogen therapy, the finding of low estrogen receptor levels in meningiomas may reflect this receptor's lack of clinical significance in these tumors. Conversely, since meningiomas are known to enlarge in pregnancy and in the luteal phase of the menstrual cycle, the finding of high progesterone receptor levels in almost all series to date, may indicate the importance of anti-progestines instead of, or in conjunction with, antiestrogens. Kobayashi et al.[10] in Japan followed one patient during a 16 week postoperative course of Tamoxifen therapy. The first operation demonstrated the presence of estrogen receptor in the tumor. During the 16 week course no new neurologic deficits developed, and at six months, during the patient's second surgery, the tumor was still present unchanged in size, but the estrogen level was now undetectable.

Conclusion

There does appear to be some definite association ween steroid hormones and meningiomas. This association needs further investigation, since it holds possible significant future potential for the development of adjuvant therapeutic agent in the treatment of these common cerebral tumors.

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Cerebellar Cortex Role of Climbing Fiber Afferents

TIMOTHY J. EBNER, M.D., Ph.D.*

Recent developments in the physiology of the cerebellar cortex are reviewed. Emphasis is placed on interpreting the role of the climbing fiber afferents in the cerebellum. Included is a discussion of how climbing fiber afferents control the gain of the cerebellar cortex, the recently described sagittal organization of the nucleocortical and olivocerebellar projections, and climbing fiber afferent rhythmicity.

Since the time of Ramon y Cajal the cerebellar cortex has fascinated neurobiologists. The apparent simplicity and homogeneity of the cerebellum's circuitry is appealing and promises understanding. With only two major classes of afferent input and five intrinsic types of neurons, the cerebellar cortex appears experimentally and conceptually approachable. In spite of the wealth of information obtained in the last 20 years, a precise description of the cerebellar cortex's role in motor behavior remains elusive.[1-3] Observations 100 years old form the basis for the contemporary view that the cerebellar cortex plays a role in coordination, orthometria and compensation.[1] Satisfactory explanations of how the cerebellar circuitry contributes to motor coordination are not yet available. Having acknowledged the limitations, this review presents recent developments in our understanding of the cerebellar cortex. Emphasis is placed on the role of the climbing fiber afferent projection.

An intriguing aspect of the cerebellar cortex is that the two major input systems possess quite different morphological and physiological properties. The mossy fiber afferents originate in numerous spinal and supraspinal structures and transmit information from many peripheral modalities.[2] Diverging extensively, each mossy fiber afferent contacts numerous granule cells in the cerebellar cortex (Figure 1A). Granule cell axons ascend to form the parallel fiber system which synaptically contacts and excites Purkinje cell dendrites. Purkinje cells are the only output neurons of the cerebellar cortex, projecting to cerebellar and vestibular nuclei. The mossy fiber-granule cell-parallel fiber circuitry modulates the discharge of Purkinje cells, encoding both the time course and intensity of peripheral proprioceptive and cutaneous inputs.[4] Purkinje cell action potentials produced by the mossy fiber-granule cell circuitry are called "simple spikes" and have a high spontaneous rate ranging from 20-150 spikes/sec (Figure 1B).

Unlike the mossy fiber afferents, climbing

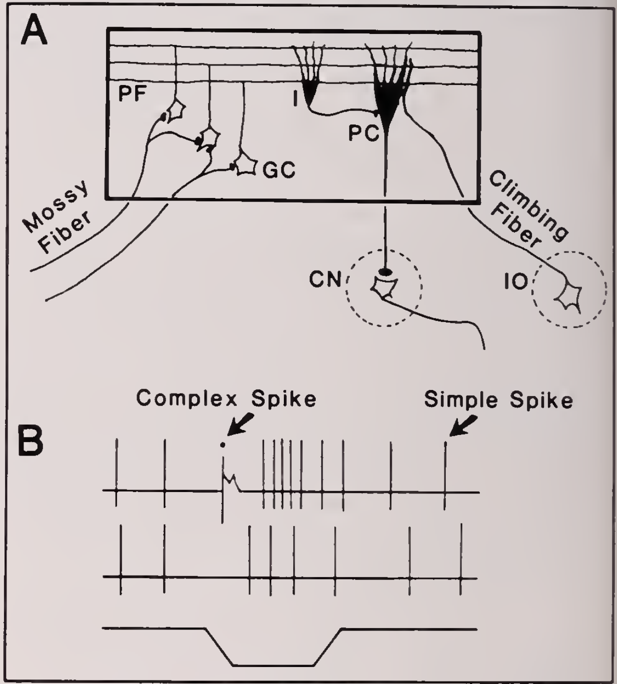

Fig. 1(A) - Simplified schematic of the circuitry of the cerebellar cortex. Mossy fiber afferents synapse on granule cells (GC) which ascend from the parallel fibers (PF). Parallel fibers synapse and excite both Purkinje cells (PC) and cerebellar interneurons (I). Purkinje cell axons project to the cerebellar nuclei (CN). The climbing fiber afferents originate in the contralateral inferior olive (IO) and monosynaptically excite Purkinje cells.

Fig. 1(B) - Diagrammatic example of the increase in a Purkinje cell's responsiveness when a complex spike occurs on the onset of a passive movement of the ipsilateral forepaw. In the top trace a complex spike is associated with the movement, and there is a large increase in simple spike activity. In the second trace no complex spike is evoked by the movement, and the simple spike response is less dramatic. Forepaw displacement shown at the bottom.

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fiber afferents originate in one location, the inferior olive (Figure 1A). A climbing fiber afferent monosynaptically synapses with its target Purkinje cell, densely arborizing with its dendritic tree. A single Purkinje cell rarely receives input from more than one inferior olivary neuron. When a climbing fiber afferent activates a Purkinje cell an all or nothing excitatory depolarization occurs, the so-called "complex spike" (Figure 1B). Each Purkinje cell complex spike represents the discharge of its climbing fiber afferent. Despite the powerful one-to-one excitation of a Purkinje cell, the complex spike discharge rate is remarkably low at only .1 to 3.0 per second. The low climbing fiber afferent discharge rate implies they cannot encode either the time course or the intensity of an input. Instead, climbing fiber activity appears to encode an "error" in motor performance or an unexpected sensory stimulus.[5] How is this error signal translated into a corrective action? Low frequency discharge of evoked complex spikes would make only a small contribution to the Purkinje cell's normally high rates of simple spike activity. Our work[6-8] demonstrates the complex spike increases the responsiveness of a Purkinje cell to incoming mossy fiber inputs (Figure 1B). Both reductions and increases in Purkinje cell simple spike activity are accentuated for several hundred milliseconds. Possible mechanisms underlying the increase in Purkinje cell "gain" are the prolonged conductance changes in the Purkinje cell membrane evoked by the climbing fiber input.[9] In support of this view other investigators showed climbing fiber input tonically depresses simple spike activity.[10]We hypothesized that climbing fiber afferent input controls the responsiveness of Purkinje cells to mossy fiber input. As predicted by this hypothesis, loss of the climbing fiber input would interfere with the ability of the Purkinje cell to appropriately process mossy fiber input.[11] Since climbing fiber input is preferentially activated during sensory or motor "errors", the increased responsiveness of the Purkinje cells to the associated mossy fiber input could be used to correct for the error or respond to unexpected sensory inputs. This corrective action could underlie the cerebellum's role in coordination, orthometria, and compensation.

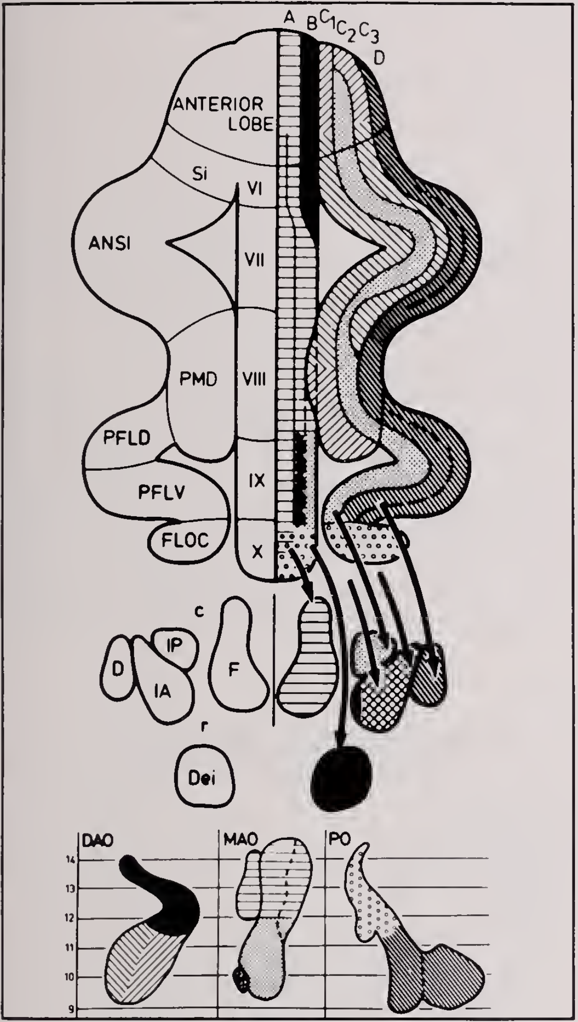

Fig. 2 - Unfolded cat cerebellar cortex showing the sagittal organization of the corticonuclear and climbing fiber afferent projections. The different shading patterns on the cerebellar cortex correspond to the different target nuclei and the regions of the inferior olive which project to a corticonuclear zone. Abbreviations F: fastigial nucleus, IP: posterior interposed nucleus, IA: anterior interposed nucleus, D: dentate nucleus, Dei: Deiter's nucleus. Abbreviations for the three parts of the inferior olive: DAO: dorsal accessory olive, MAO: medial accessory olive, PO: principal olive. Numbers on left are stereotaxic coordinates. Preprinted from Groenewegen et al.[17] with permission.

The classical transverse-lobular concept of cerebellar organization has been replaced by a sagittal-zonal organization (Figure 2). Purkinje cell output is segmented into distinct sagittal compartments, the corticonuclear zones.[12] Climbing fiber afferents exhibit an equally strict sagittal organization, with specific regions of the inferior olivary nucleus projecting to sagittal zones in the cerebellar cortex.[4] Mossy fiber afferent input may also conform to this sagittal organization.[1] Although the functional importance of the sagittal zonation of the cortical nuclear projection is not clear, stimulation and lesion studies suggest each zone contributes differently to motor behavior.[1-3] One striking feature of our studies is the extensive overlap in the distribution of the simple and complex spike responses evoked by a peripheral stimulus.[13] The area of the cerebellar cortex with the greatest simple spike modulation is the same area in which complex spikes are evoked, consistent with the hypothesis that climbing fiber input increases the responsiveness of Purkinje cells to mossy fiber inputs. Certain sagittal zones are more responsive to some inputs than other zones.[13] These findings suggest a func-

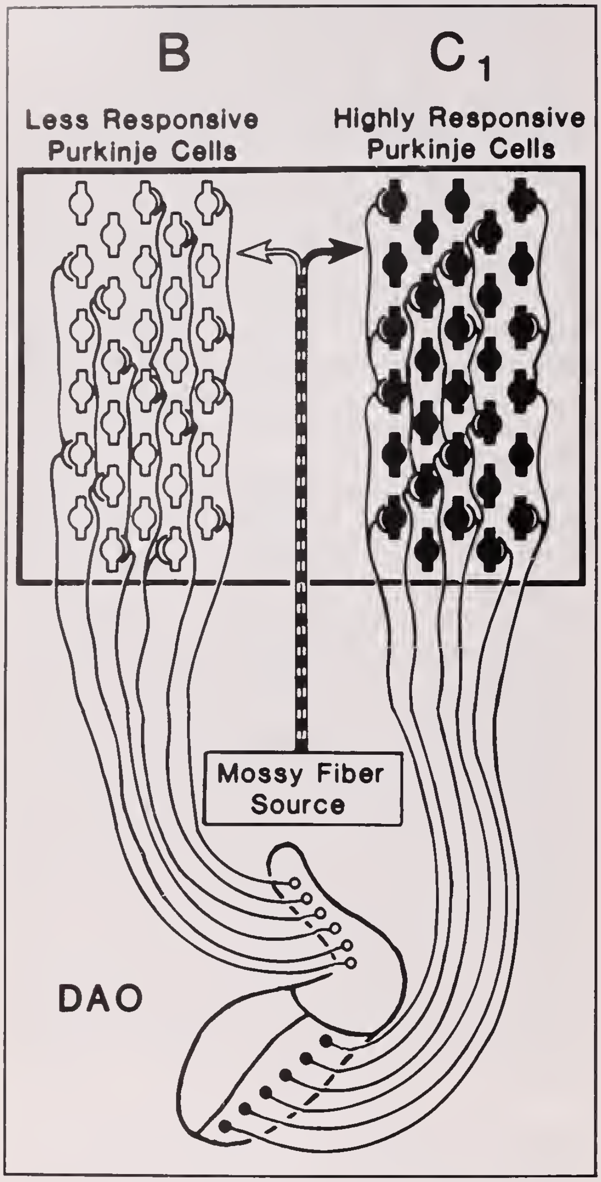
B
C_1
Less Responsive Purkinje Cells
Highly Responsive Purkinje Cells
Mossy Fiber Source
DAO

Fig. 3 - Stylized representation of two neighboring sagittal zones, B and C_1. Zone B receives its climbing fiber input from the caudal dorsal accessory olive and C_1 from the lateral aspect of the rostral DAO. If the climbing fiber afferents to C_1 were selectively activated this cortical zone would be highly responsive to incoming mossy fiber input while zone B would not. The regions of the anterior interposed nucleus which receive input from C_1 would be highly modulated, while Deiter's nucleus which receives input from B would not.

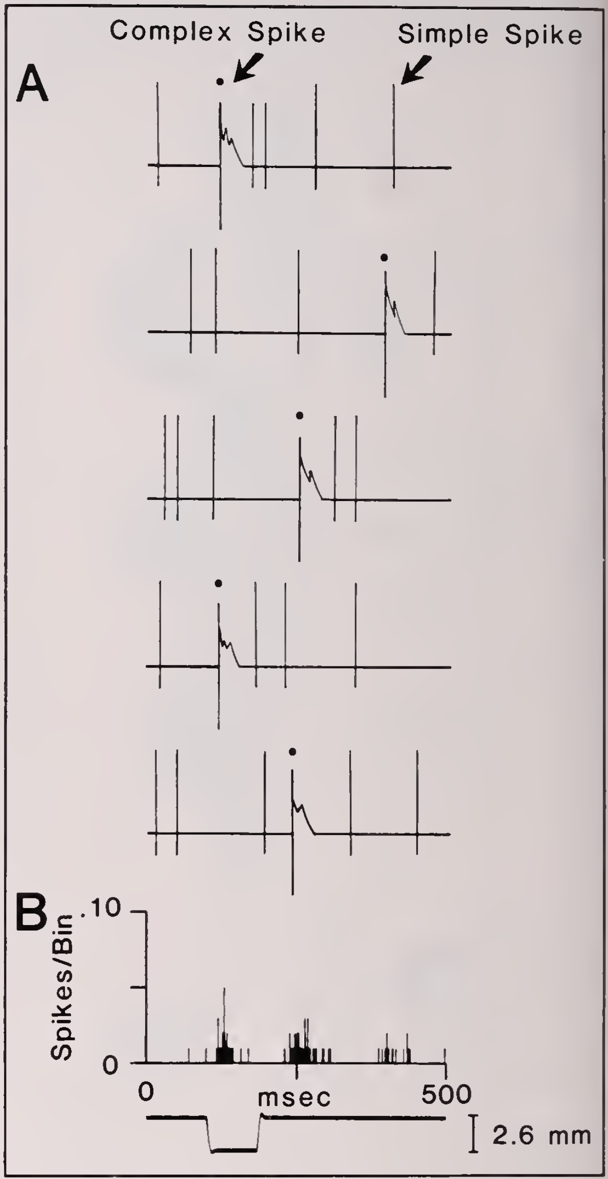

Fig. 4 - Diagrammatic representation of the rhythmic firing of climbing fiber afferents. In A are five traces of a Purkinje cell's simple and complex spike discharge to an ipsilateral forepaw movement (displacement trace shown at the bottom of B). The complex spike discharge occurs at preferred intervals of 130msec (7.5 Hz). When 50-100 complex spike responses are summed as in B, the rhythmic characteristic of the climbing fiber discharge is evident. Dotted spikes are complex spikes.

tional relationship between the olivocerebellar and corticonuclear zones.

We proposed that the portion of the inferior olive activated during motor behavior would control the corticonuclear projection most responsive to mossy fiber afferent input (Figure 3). The corticonuclear zone activated would modulate the appropriate cerebellar or vestibular nuclei. Although the distribution of climbing fiber input activated by different combinations of inputs to the inferior olive would differ during complex motor behaviors, the Purkinje cells in the corticonuclear zones activated by the climbing fiber inputs would be most responsive to the incoming mossy fiber information. Different behaviors would require the activation of different sequences and combinations of olivocerebellar and corticonuclear sagittal zones.

The inferior olive exhibits another intriguing property in its response to peripheral inputs, a tendency to discharge rhythmically at frequencies from 5-12 Hz.[14,15]Nearby Purkinje cells exhibit a comparable periodic complex spike discharge, suggesting entire corticonuclear zones may be rhythmically activated. Presumably an input synchronizes a group of inferior olivary neurons[16], possibly by the electrical coupling existing between these cells.[9] Analysis of the rhythmicity revealed a single climbing fiber discharges only once in response to a single stimulus (Figure 4). The rhythmicity results from the complex spike discharging at preferred, equal intervals following the stimulus. The oscillation is not the result of a single neuron oscillating at 5-12 Hz, but the property of an ensemble of inferior olivary neurons.[15] A single neuron is prevented from oscillating by membrane mechanisms which limit its firing frequency. Inferior olivary neurons behave as a population of coupled, weak nonlinear oscillators.

Taking into account the climbing fiber afferents rhythmicity and its control of the gain of the cerebellar cortex prompts the hypothesis that the climbing fiber afferent system times the output of the cerebellar cortex. Climbing fiber afferent input is viewed as interrogating the cerebellar cortex at preferred intervals. The inferior olive's rhythmicity may be the central "motor clock" which times and controls the amplitude of the output of the cerebellar cortex. The complex coordination of muscles crucial to motor control may require such timing.

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Pathophysiology of Neuronal Signaling in the Cerebral Cortex

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Cortical neurons receive, integrate and transmit electrical information. Cellular abnormalities may disrupt this flow of electrical processing. The use of "in vitro" physiological analysis and mathematical models of neurons may help identify abnormalities of electrical signaling in such clinical situations as epilepsy and senescence.

Cortical neurons and dendrites appear uniquely designed for the integration and processing of synaptic inputs. Until recently this electrical processing was poorly understood at a cellular level. However, the use of intracellular recording from neurons in the cerebral cortex has considerably advanced understanding of both normal and abnormal neuronal functioning. Recent techniques of analysis have also included the use of "in vitro" brain slices[5] and mathematical models of neurons.[6,7] Using this data, a framework explaining the electrical activity of neurons has been formulated. This framework takes into account information from anatomical, physiological and mathematical studies of nerve cells.[6,7] I will review cellular hypotheses for abnormal neuronal functioning in two different clinical situations, focal epilepsy and senescence. These hypotheses relate findings from animal models of disease to the human processes, using this framework of electrical signaling.

The neuron's role appears to be the electrical integration of a multitude of small electrical signals. This process of integration includes direct signal summation across the spatial extent of the neuron, as well as the effect of modulatory synaptic inputs and voltage-dependent currents. The output for an individual cell is directed along the axon and consists of propagated action potentials. The overall schematic for a small region of the cortex thus consists of a convergence of inputs onto a neuron, integration of all these inputs and then divergence of the output onto other nerve cells. The circuitry between neurons determines the level and kind of regional function expected. However, signal processing in individual nerve cells or small local circuits may go away. Certain cortical regions appear more susceptible to dysfunction than others, according to the type, interconnection and density of cells. This regional susceptibility may be very important in determining the type of behavioral dysfunction associated with states such as focal epilepsy and senescence. The hippocampus appears to be affected frequently in both of these situations.

The hippocampus has also become a common model for the functioning of the cerebral cortex in general. Though the hippocampus possesses a simple cortical arrangement, the neurons are similar to neocortical cells in both appearance and physiology. Additionally, the hippocampus has a regular, laminated structure making it ideal for use in "in vitro" brain slices. Hippocampal pyramidal cells are structurally complex and possess approximately 20,000 synaptic inputs each. Most excitatory synapses are located on dendritic spines, while inhibitory inputs are mainly situated on the cell body. In addition to these ordinary synapses, modulatory inputs include both noradrenergic and cholinergic synapses. Other factors also can affect the importance of an input signal, such as voltage-dependent membrane currents and the location of an input synapse on the dendritic tree.[7] The process of synaptic integration may be evaluated by analyzing inputs and modulatory influences separately. This form of analysis requires intracellular physiological recording and the isolation of individual synaptic inputs. Complex mathematical models of the nerve cells are required to assess the overall importance of synaptic inputs in this context, as well as to predict neuron behavior. Thus, the use of "in vitro" hippocampal slices and neuron models allows a comprehensive approach to synaptic function and dysfunction.

Focal Epilepsy

Focal epilepsy may be defined as a localized hypersynchrony of neurons. Increased synchronization of neurons in a focus may lead to the EEG and behavioral manifestations of partial seizures. The mechanisms responsible for the pathological synchronization have been studied intensely in both mammalian models and man.[5,6] Both acute and chronic animal models of seizure foci have been studied, using the "in vitro" brain slice technique. The hippocampus provides a good substrate for study because of its liability to develop seizures. Also, complex partial seizures, a common clinical entity, are thought to emanate from the medial temporal lobe, hippocampus and limbic system.

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The main requirements for neuronal involvement within a seizure focus include decreased inhibition, recurrent excitation onto neurons and the generation of inward calcium currents. The major relation between the animal models of seizures and human epileptic foci appears to be a decrease in tonic inhibitory influences.[5] Decreased inhibition may be caused acutely by the administration of penicillin, which partially blocks inhibitory signals.[6] In brain regions like the hippocampus there appear to be a "pool" of susceptible neurons, which possess both recurrent self-excitation and inward calcium currents. These neurons appear poised on the verge of synchronization with other surrounding cells, but are suppressed by the normally dense network of inhibition. A high resting level of inhibition appears common throughout the cortex. A partial loss of this inhibitory effect in a susceptible region may lead to rapid synchronization of its electrical activity. Whether this local synchronized signal will generalize depends on the pathways of spread and their functional level of inhibition.

Thus, most epileptic foci possess interictal EEG spikes, indicative of ongoing synchronized neuronal activity. Only rarely do these interictal spikes recruit the surrounding regions into even a partial seizure. The paucity of actual seizures in most patients with epilepsy attests to the excellent ability of the cortex to suppress abnormal activity. But this paucity of actual ictal events has hampered the study of neuronal transition into a seizure and the mechanisms available to cause seizure termination. Other processes in addition to decreased inhibition may also play a role in the generation of an ictal event. These include tissue potassium elevation, chronic scarring and gliosis, dendritic changes and actual loss of the neurons mediating inhibition.[5] These neuronal changes and their significance may be evaluated at a cellular level using "in vitro" physiologic techniques and mathematical neuron models.[5,7] Thus, an analysis of synaptic integration has helped to understand the importance of loss of inhibition, circuitry changes, and inward calcium currents. The techniques have also been applied to human tissue, though with only preliminary results.[5]

Senescence

Consistent behavioral changes have been noted in older individuals, who often demonstrate deficits in short-term memory abilities.[2] A number of neuropathological alterations have been described in senescence, including cortical atrophy, dendritic changes, a decrease in the number of excitatory afferents and alterations in the cholinergic innervation to the cortex.[1,2,4] Many of these changes are most marked in the hippocampus, which appears to be involved in memory formation.[3] Unfortunately, there is no good framework for the evaluation of the significance of such neuroanatomical changes. Likewise, only a few studies have been performed on the cellular mechanisms underlying an animal model of senescence, aged rats.[1] The neuropathological alterations noted in Alzheimer's disease appear much more severe than those of senescence. The lack of understanding of the cellular pathophysiology associated with either senescence or Alzheimer's disease has considerably hampered efforts at appropriate palliative or curative therapy.

However, the predominant impression of the state of senescence is of decreased neuronal output. That neurons receive fewer excitatory inputs has been suggested by anatomical studies.[4] Additionally, the positive modulating effect of cholinergic inputs may be decreased, particularly in hippocampus.[2] The ability of a neuron to compensate for decreased excitatory input may be limited, thus giving rise to a functional loss of output. Whether the cellular alterations in senescence and Alzheimer's disease differ in quality or quantity remains controversial. But, the cellular approach to neuronal function in both cases may certainly give good clues as to the causes of dysfunction and to the possibility of ameliorative therapy. Behavioral alterations at an organism level may be rooted in the pathologic neuronal processing of electrical signals. The analysis of neuronal electrical signaling and its pathophysiology may thus be very helpful in discriminating mechanisms and also possibly treatment.

Conclusions

Neurons are unique for their extended ability to electrically process and integrate a large number of input signals. An analysis of the cellular mechanisms of brain function and dysfunction may lead to clues regarding both pathogenesis and ameliorative treatment. These mechanisms may be approached by physiological analysis of neuron activity, the intracellular injection of dyes and mathematical modeling of signal transfer and synaptic integration.[7] Such electrical analysis may also be applicable to human brain tissue removed at the time of diagnostic or therapeutic surgery on the brain.[5] Thus, analysis of electrical brain dysfunction at a cellular level may profitably lead to the understanding of several different clinical states affecting the cerebral cortex.

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Evaluation of Patients for the Surgical Management of Epilepsy

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The application of pharmacokinetics to medical therapeutic regimens, refinements in the radiography and electrodiagnosis of brain dysfunction, and advances in surgical technology and methodology have significantly improved the opportunity for patients with epilepsy to achieve control of their seizures before the chance of realizing their full potential for personal growth and development is irretrievably lost.

The development of new anticonvulsant drugs, the monitoring of serum anticonvulsant drug levels, and the application of pharmacokinetics to therapeutic regimens have resulted in more sophisticated and effective medical management of epilepsy. Complete control of seizures by medical treatment is achieved in over 50% of patients. Another 35% of patients are improved though they may have side effects from medication as drug levels are increased and polypharmacy regimens implemented in an effort to achieve complete seizure control.[1]

Complete seizure control is achieved for two years in approximately 40% of patients, for five years in 20% of patients and for ten years in 10% of patients.[2]Even after complete remission of seizures for four years, 30% of children will have a relapse of their seizure disorder if their anticonvulsant medication is stopped.[3] Kiorboe has documented that the chance of becoming seizure free is somewhat dependent upon the seizure pattern and the likelihood of becoming seizure free with primary generalized seizures is almost twice that with complex partial seizures.[4] Twenty-five percent of epileptics are difficult to control with medication and at least 15% are refractory to medical management. It is conservatively estimated that 10% of epileptics would benefit from seizure surgery. There are, therefore, approximately 105,000 patients in the United States alone who are candidates for surgical treatment of their epilepsy.[5]

Rodin reported epileptics to have an age-adjusted death rate five times greater than the national average.[6] Juul-Jensen reported epileptics to have a death rate 200% higher than the nonepileptic population.[7] Furthermore, an uncontrolled seizure disorder with origin early in life carries a high risk of low intelligence regardless of etiology.

More needs to be learned about the prolonged or lifelong consumption of anticonvulsant medication and the interaction of these drugs with each other and with other medications. In addition to acute toxicity associated with high tissue and serum levels, long term complications from drug therapy include: folate deficiency, Vitamin D deficiency, peripheral neuropathy, changes in connective tissue, liver dysfunction, endocrine dysfunction, and altered mentation.[2]

Indications for the Evaluation of the Seizure Patient for Surgical Management

Consideration of the need for seizure surgery and systematic evaluation of the surgical candidate occurs under a variety of circumstances. The most immediate and occasionally urgent indication for surgery is a symptomatic seizure disorder associated with a radiographically confirmed lesion such as an intracranial neoplasm, brain abscess, or vascular malformation. A computerized tomographic (CT) scan with contrast enhancement is almost always warranted during the evaluation of a seizure disorder, and surgery is considered if a lesion is identified in a resectable area. Surgery is often indicated in the absence of a radiographically identified focal lesion, however.

Medical intractability is documented when intensive and methodical treatment with anticonvulsant drugs, verified by adequate drug levels, are proven inadequate to control the seizures and provide the patient with normal and productive home, school and job adjustment. This evaluation takes place over a sufficient period of time for the epileptogenic tissue to mature and stabilize; enough time to access progression or retrogression of the seizure disorder; and adequate time for reasonable therapeutic trials with anticonvulsant drugs.

It is important, however, for the clinician to realize that time as well as the seizure disorder, are working against the patient who is poorly controlled by medication. Personal growth and development may be arrested by frequent seizures, recurrent trauma and drug toxicity. Social isolation may occur through loss of productivity, loss of educability, loss of current or future income, and stigmatization. It also has been shown in monkeys and man that an active epileptogenic area of brain tissue continues to undergo pathological changes. Neuronal degeneration progresses proportional to the frequency and severity of the seizures. To delay successful therapy for long periods of time results in continuing neuronal damage and loss.[8,9]

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It is not satisfactory to define "medical intractability" as persistent seizures reported by patients and families during outpatient treatment. Surgical candidates need a systematic and sequential manipulation of appropriate medications in a closely supervised inpatient setting with intensive monitoring of their seizures.[10] They are then followed closely as outpatients with regular anticonvulsant blood level examinations and detailed review of seizure diaries. Carefully documented persistent seizures under these controlled conditions warrant additional evaluation of the patients regarding their suitability for surgery.

All patients are classified according to seizure type(s) based upon clinical documentation of multiple ictal events and electroencephalographic recordings. EEGs often include routine and sleep-deprived recordings, multiple four to six hour video EEG sessions, and 72 hour or longer 16-channel telemetry EEG.[10] Sphenoidal and nasopharyngeal leads may be helpful in recording seizure discharges from the medial temporal regions. The goal of these multiple recordings is to record background and interictal activity in different states of alertness and document several ictal events. The amount and often the location of seizure discharges vary significantly in different states of arousal within a given patient and from patient to patient. Hyperventilation, photic stimulation and pharmacologic activation may be necessary to define and localize the site of seizure origin and pattern of seizure spread. Intravenous sodium pentothal[11] and intracarotid amobarbital[12] are particularly useful in the characterization of epileptiform discharges.

Lombroso and Erba[11] introduced the technique of intravenous sodium pentothal as a method for identifying the focus or foci of secondary bilateral synchrony in generalized seizures. A unifocal suppression of beta activity on the EEG in an area with persistent focal epileptiform activity in response to the barbiturate strongly suggests a focus of origin for secondary generalization of the seizure. A generalized and symmetrical enhancement of beta activity on the EEG with suppression of all epileptiform activity suggest that the patient has no specific identifiable focus or foci to account for the generalized seizures. Multiple areas of poor beta formation and/or persistent generalized seizure discharges suggest multiple areas for secondary seizure origin.

The intracarotid amobarbital test is usually performed preoperatively at the time of cerebral angiography. Sodium amobarbital suppresses generalized epileptiform activity on the EEG when the cerebral hemisphere with the active epileptiform focus is injected. The intracarotid amobarbital test is also important in planning the nature and extent of seizure surgery in that it identifies hemispheric dominance for speech and memory.

Intraoperative and Extraoperative EEG for Lateralization and Localization of Epileptogenic Tissue

Most epilepsy centers have used the surgical approach for epilepsy developed by Penfield and Jasper at the Montreal Neurologic Institute.[13] The procedure is done under local anesthesia. The cortex is mapped by intraoperative electrical recording and stimulation. Epileptogenic tissue is then resected if seizure discharges are identified as emanating from a surgically accessible site. After the epileptogenic tissue is excised, electrocorticography (ECG) is performed to identify residual seizure discharges. General anesthesia is avoided because it suppresses EEG seizure activity, suppresses motor responses to electrical stimulation of the cortical surface used to map the sensorimotor and speech areas, and suppresses afterdischarges. The method is often successful, but is not satisfactory for children and mentally disturbed or retarded patients, nor for patients in whom preoperative seizure lateralization and approximate localization cannot be determined. Furthermore, interictal electrical discharges observed during surgery are often unreliable for localizing the focus, whether they occur spontaneously or are induced by electrical stimulation. The most reliable evidence for localizing an epileptogenic focus are EEG changes during the spontaneous development of the patient's symptomatic seizures. This is neither likely, convenient, nor particularly desirable during a craniotomy under local anesthesia.

At the University of Minnesota Epilepsy Treatment Unit we are currently using extraoperative EEG for localization of epileptogenic tissue.

Stereotactically implanted depth electrodes are used to obtain artifact free recordings of seizure activity originating in the medial temporal and basifrontal regions when neither noninvasive nor sphenoidal recording techniques are diagnostic.[14] When evidence suggests an epileptogenic focus near or adjacent to functionally important cerebral cortex, an array of subdural electrodes are placed over the cortical surface of interest and extraoperative electrocorticography performed. This technique permits the localization of spontaneously occurring seizures by ECG and the precise localization of cortical speech, motor, and sensory functions by means of electrical stimulation and the elicitation of cortical evoked responses.

This method is preferable for children because all surgical manipulation is accomplished under general anesthesia. Prolonged ECG can be carried out painlessly in an anxiety-free environment by personnel the patient is comfortable with. The technique lends itself to simultaneous video and EEG recording over time. The physician has the opportunity to determine which cortical area shows the first sign of abnormal activity immediately preceding a clinically detectable seizure. The motor and sensory responses to cortical stimulation can be determined while the patient is awake and alert and the relationship between the sensorimotor region of the cortex and the epileptogenic tissue can be established. If recordings are taken from the dominant hemisphere, speech arrest or dysphasia produced by electrical stimulation is used to determine the boundaries of the language cortex. In some patients, sensory evoked responses may be the only method for identifying the sensorimotor region.

Serial electrodiagnostic studies localize the epileptogenic area and define the nature and pattern of seizure discharge and spread. The localization must be confirmed and consistent. The recording of the spontaneous ictal event itself is the ideal means of identifying the site of origin of a seizure. It is thereby possible to determine if the characteristic ictal event is unifocal and surgically accessible or multifocal in origin.

Surgical treatment by topectomy or lobectomy has been standard practice for those patients in whom an isolated epileptogenic focus caused the majority of seizures unresponsive to medical therapy. Often, however, an isolated and surgically accessible epileptiform focus cannot be identified and traditionally individuals without isolated foci have not been considered surgical candidates. They have had to accept their fate and accommodate as best they could, even to the point of suffering repeated serious injuries from sudden falls associated with atonic seizures.

Epilepsy centers are no longer accepting this restricted concept of surgical treatment of the epilepsies. When patients are identified who have a surgically inaccessible epileptogenic focus or multiple foci with secondarily generalized seizures producing sudden loss of consciousness, atony, falls and repeated injuries, they are now considered for disconnection procedures for the purpose of preventing seizure spread to the opposite cerebral hemisphere. Although multiple interhemispheric pathways exist in humans which may effect secondary bilateral synchrony, the corpus callosum is probably the major fiber tract that subserves this pathway for rapid secondary generalization of seizure spread to the opposite cerebral hemisphere. It also may be surgically divided in one operative session with minimal morbidity. The EEG usually demonstrates a postoperative reduction in generalized seizure discharges and bilateral synchrony which parallels the clinical improvement.[15]

Summary

The selection and evaluation of patients for seizure surgery is labor intensive and is usually best done in the setting of a dedicated Epilepsy Treatment Unit and Comprehensive Epilepsy Program. A neurologist/electroencephalographer specializing in epilepsy and a neurosurgeon with experience in stereotactic and seizure surgery are supported by a neuroradiologist, neuroanesthesiologist, neuropsychologist, psychiatric social worker, clinical psychologist, and nursing staff comfortable working with seizure patients.

The goal of seizure surgery is to either eliminate epileptogenic tissue where possible or confine the spread of seizure discharges so they do not become generalized with alterations of consciousness and muscle tone. The approach and methodology reviewed provide the means to safely and effectively select those patients who are truly refractory to medical management and who will respond to surgical therapy. The techniques are now available to achieve the objectives of seizure surgery before personal growth, development, and potential are arrested by frequent or severe seizures, recurrent trauma, or chronic drug toxicity resulting in social isolation through stigmatization, loss of educability, and loss of productivity.

References will be found on page 532.

Brooke Formula for Traumatic Cerebral Contusion

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Over a two-year period, we developed a therapeutic protocol for the management of significant cerebral contusion. It is based upon fundamental physiological principles directed at stabilizing autonomic activity. Of our initial 35 patients, only one patient required craniotomy for deteriorating neurologic status, secondary to a delayed post-traumatic intracerebral hemorrhage. All other contusions resolved on medical management alone. Our protocol has been applied to other clinical conditions, inside and outside the central nervous system, where rapid mobilization of edema and maintenance of tissue perfusion is critical.

The primary goal in the management of traumatic cerebral contusion is to avoid progressive uncontrolled swelling and/or delayed intraparenchymal hemorrhage into the injured region. For success, we believe that four therapeutic principles must be followed: (1) cerebral perfusion must be adequate, (2) cerebral edema must be simultaneously mobilized, (3) nutritional requirements of the patient must be realized, and (4) autonomic nervous system stability must be maintained. The latter, of course, will assist and promote stability of the former. Autonomic instability, characteristically lability of pulse, blood pressure, temperature, serum electrolytes, and blood gases must be corrected by a number of measures. These include removal of structural cerebral lesions aggravating cerebral edema, correction of metabolic aberrations consequent to edema and providing pharmacologic support for reversal of autonomic instability. At all times therapy was directed to maintain normal physiologic, clinical and laboratory parameters. This work was initially conducted at the Brooke Army Medical Center, Fort Sam Houston, Texas.

Principles in the Management of Traumatic Cerebral Contusion

The primary management of any head injury is to ensure systemic stability by providing airway maintenance, oxygenation, and systemic circulatory support. Once this is accomplished, specific diagnosis and treatment of the central nervous system injury follows. The standard management of severe craniocerebral injury is immediate intubation, hyperventilation with reduction of PCO_2 levels to 24-28 torr, circulatory blood pressure support and medical "decompression" with the use of steroids. If necessary, osmotic diuretics such as intravenous Mannitol at 1.5 Gms/kg are utilized. Other measures include immediate neurodiagnostic tests, followed by correction of surgical defects and removal of any extraparenchymal cerebral lesion.[3,4]

Intubation and hyperventilation, a now standard neurosurgical technique, represents (conceptually, in our view) stabilization of the autonomic nervous system. By decreasing PCO_2 we are affecting cerebrovascular resistance as to increase cerebral perfusion. By correcting hypovolemia, we reduce baroreceptor over-activity, catecholamine excretion and thereby improve cerebral perfusion by reducing cerebral vasospasm.[2,6]

Signs of CNS herniation may be described in terms of autonomic components. Reflex blood pressure alteration, the so-called Cushing reflex, has been well described and consists of increased systolic blood pressure, a widened pulse pressure, and progressive bradycardia. These reflex autonomic responses reflect reduced cerebral perfusion to brainstem medullary centers. The obvious therapeutic goal is to avoid and prevent the occurrence of these signs and symptoms of herniation with their autonomic sequellae.

Patients with cerebral contusions are often intermittently agitated and somnolent when first admitted to the emergency ward. Frequently they display a focal neurologic deficit. Most importantly they are at significant risk for marked elevations of intracranial pressure. This may lead to cerebral herniation, either secondary to uncontrolled swelling or delayed post-traumatic intraparenchymal bleeding. Again, the therapeutic goal is to avoid or prevent this progressive cascade of events.

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The opinions of the authors expressed herein are those of the authors. They do not reflect official policies or opinions of the Departments of Defense, the Army, or the Navy.

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The Brooke Formula for Cerebral Contusion Management

Maintenance of Intravascular Volume

Once cerebral contusion has been diagnosed by CT scan, and general therapeutic principles instituted, continuous infusions of 5% plasmanate at 30-50cc/hr. are begun, in order to maintain normal central venous pressure.[1] All intravenous rates are adjusted gradually to prevent wide swings of intravascular volume and changes in autonomic tone. Bolus therapy is strictly avoided to prevent variations or wide swings of intracranial pressure, which may occur with rapid sporadic infusions of colloid.

Mobilization of Edema

Simultaneous, continuous infusion of furosemide at rates ranging from 0.5-2.5 mg/hr. is also initiated.[5] Once again, the objective is to reduce cerebral and peripheral edema with significantly affecting normal tissue, and without using intermittent bolus therapy. Profound diuresis in response to potent diuretics can elicit autonomic overactivity and therefore is to be avoided.[3]Moreover, intravascular volume must be normal for furosemide to be most effective in mobilizing traumatic edema. Furosemide 10-20 mg. is administered in 500cc of D5/⅛/¼NS with 40 mEq., KC1/500cc, and 5 mEq. of sodium bicarbonate/500cc. This infusion is administered at 50cc/hr. to provide approximately 1-2 mg. of furosemide/hr., depending upon the amount of cerebral swelling.

In addition, intravenous Decadron is utilized at 10 mg. intravenously every 4hr. for 48 hours, and then the dosage rapidly reduced. This stabilizes the injured cell membrane, thereby maintaining colloid within the intravascular space.[3]

Maintenance of Nutrition

Nutrition, in the form of hyperalimentation, by nasogastric tube or intravenous routes, is begun within 24-48 hours of admission. This provides protein for maintenance of vascular volume. It also provides the necessary calories to forestall catabolism and the necessary glucose for normal cerebral metabolism.

Patient Monitoring

Throughout the course of therapy, meticulous monitoring of autonomic parameters is performed. As long as blood pressure, pulse, temperature, serum electrolytes, serum glucose and osmolarity, and arterial blood gases remain stable, and as long as the patient's neurologic status remains stable, our therapy is maintained. Repeat CT scanning is performed at 48 hours, unless there is difficulty in controlling the autonomic parameters. We believe that stability of the autonomic nervous system is only possible when cerebral perfusion is adequately maintained. When clinical improvement occurs, the infusions are progressively withdrawn over 48-72 hours and are replaced by oral Lasix at 5-10 mg. b.i.d. and Plasmanate 250cc I.V. daily, as long as some degree of radiographic swelling is still present.

Avoiding Patient Agitation

Since cerebral contusion patients are frequently and significantly agitated, some degree of sedation is frequently necessary. We have chosen to utilize continuous infusions of small doses of morphine sulfate. On ten occasions, we have used between 5-10 mg. of M.S./500cc. With an infusion rate of 50cc/hr., morphine will be delivered at approximately 1-2 mg./hr. This will provide excellent sedation; its drug effects are readily reversed with Narcan if required. Obviously the lower doses are preferred.

Complications of therapy have included phlebitis at the I.V. site and congestive heart failure especially if underlying cardiac disease is present. We have been able to maintain such therapy for as long as two to three weeks with maintenance of normal autonomic parameters.

Results

Results of our initial 35 patients with traumatic cerebral contusions were gratifying and encouraging. Within the group, only one patient developed a delayed intraparenchymal hemorrhage requiring craniotomy. All other patients with these significant isolated cerebral contusions, who were without an associated extracerebral lesion or open injury, resolved on medical management alone. All are now independent in activity and normal in neurologic function. This was not the expected outcome, especially since 16 of our patients presented initially with a Glasgow Coma Scale less than eight. Interestingly we observed soft tissue endematous injuries of the face and extremities (when associated with isolated cerebral contusion) resolved more rapidly than the CT scan resolution of the cerebral contusion and edema.

Conclusion

We have developed a therapeutic protocol while assigned to Brooke Army Medical Center which seems to offer an effective medical management for the isolated cerebral contusion. It is based upon sound physiological principles and appears to be effective. The autonomic nervous system and its control in the management of head injury is an area requiring further vigorous study.

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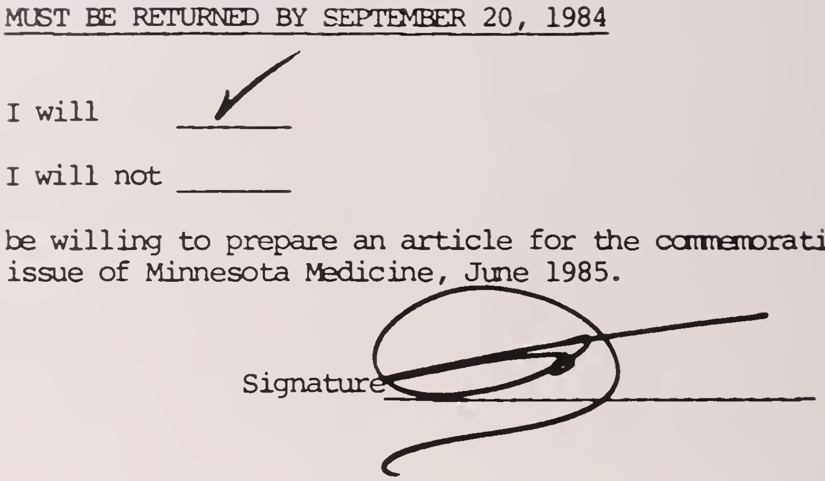

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Fig. 4 - Enthusiastic Postcard Response for this July issue of MINNESOTA MEDICINE. Editor's note to this still unidentified author: Did we receive your manuscript?

Longterm Outcome of Closed Head Injury

P. THIENPRASIT, M.D. Ph.D.*, STEVEN V. FISHER, M.D.†,
MARY H. ALCORN, R.N. M.S.N.**

One year outcome of patients with significant head injury showed that most deaths from head injury occurred early and usually were the result of direct injury to the nervous system. A large percentage of survivors were functional at one year, and cognitive impairment was the most common disability.

Closed head injuries are a common cause of death and disability in our mechanized society. Reports of mortality rates from severe head injury range from 30-50% among those patients who presented with an initial significant neurologic deficit.[1-4] Few studies have discussed in detail the quality of life of the survivors from this group. This report reviews the outcome experience at the one year point following closed head injury. The study was carried out at a metropolitan trauma center as part of a head injury data bank investigation. Additional aspects and results of the investigation will be reported elsewhere.

Material and Method

This prospective outcome study and review was carried out between April 1, 1981 and December 31, 1983, jointly by the Departments of Neurosurgery and Physical Medicine and Rehabilitation of the St. Paul-Ramsey Medical Center. Data from 100 consecutive adult patients, between the ages of 16 and 60, who suffered significant closed head injury, and who were admitted for treatment between April 1, 1981 and February 28, 1982 were used for analysis. Patients with penetrating head injury and those who did not enter the Medical Center within 24 hours of injury were excluded. Consent was obtained from the patient or next of kin. For this study, we defined "significant head injury" as an injury that produced a neurologic deficit or impairment lasting 24 hours or more. The rationale behind such selection was based on the fact that in this trauma program several patients, following an initial neurologic evaluation, required general anesthesia for treatment or evaluation of other systems. Additionally, a significant number of individuals (35%) had blood alcohol levels greater than 0.1%. Both of these factors obviously affect neurologic evaluation which may lead to the false inclusion of patients with mild head injuries within the study.

Following admission and initial treatment, the neurologic screening evaluation was done at 24 hours. This screening included a full cognitive evaluation for orientation, comprehension of a three-part command, a three minute recall of four objects, sentence repetition, proverb interpretation and a complete motor examination, including gait and balance. Failure of any part of this screening signified the presence of an abnormal neurologic finding or dysfunction, and the patient was enrolled in the data collection protocol. Serial data collection regarding clinical status, intensive care data, complications and infection were collected at daily intervals in the first 72 hours at weekly intervals for two weeks and monthly for the first three months. At one week following injury, another screening evaluation was administered. This screening was directed towards examining in a detailed manner cognitive function. Inability to take this screening test was considered as failure to pass. Neurologic and rehabilitative examinations were then repeated at three months and six months. At one year, during a standardized follow-up visit, all survivors were evaluated for quality of life, for the amount of care required, and for the type of impairment causing the long term disability. Beyond this one year follow-up examination, further data verification was accomplished by personal interview with either the next of kin and/or employer.

Results

During the period of enrollment, 978 patients with closed head injury of varying severity were admitted to the St. Paul-Ramsey Medical Center. Of these, 216 were found to have a significant head injury with a neurologic deficit or impairment. At the 24 hour point, however, only 100 patients continued to have evidence of a neurologic deficit and were enrolled in the data collection program. Of the remaining 116 patients who had improved by 24 hours, 53 were reexam-

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This study was supported by a grant from the Medical Education and Research Foundation at St. Paul-Ramsey Medical Center.

ined at two weeks; all were found to still be neurologically normal and all had resumed normal activity, including work.

Of the 100 patients who failed the screening test at 24 hours, follow-up was possible in 95; their outcome is reported in Table 1.

TABLE 1
Outcome at One Year

Functional Capacity	Number
Return to previous work or better	24
Working with some limitation	27
Self care but unable to work	12
Skilled care institution or home attendant	5
Death	27
Total	95

As noted in Table 2, 27 patients out of the original 95 were found to be dead at one year. All deaths occurred within two months after injury, and 24 of these were within seven days. All but one of these early deaths were felt to be neurological. This exception was a death from a tear of the thoracic aorta with uncontrolled hemorrhage. Two other patients who expired within the first week had associated injuries: one with a pulmonary contusion and one with a high cervical spinal cord injury. These two patients, however, were judged to have head injuries of a severe enough degree to have likely been fatal without the associated injury. Three additional patients expired between one week and two months after head injury; all succumbed to uncontrolled infection, two of which were combined CNS and pulmonary infections. All fatal infections were related to antibiotic resistant "hospital-type" organisms.

TABLE 2
Cause and Time of Death

Time Post Injury	Number	Neurological	Associated Injury	Cause of Death Infection
Within 24 hrs	4	3	1	
24-48 hrs	10	9	1	
48-72 hrs	6	5	1	
72 hrs-1 wk	4	4		
2 wks-2 mos	3			3
Total	27	21	3	3

Sixty-eight of the original 95 patients survived to one year (Table 1). Of these, 24 were able to resume normal activity, including a return to the same or better level of job skill. In the group of patients who had full recovery at one year, 17 passed a cognitive screening within one week following injury, and all 17 had been able to return to full activity and work by three months. The remaining 44 patients were found to have varying degrees of disability at one year. Of these, 27 were able to return to limited work; 12 were unable to work but lived independently; two were home-confined with help from an attendant, and three resided in a skilled care institution. The causes of their residual neurologic disability are noted in Table 3. Among those who were able to return to some type of work, cognitive dysfunction was the most common persisting impairment.

TABLE 3
Cause of Disability

Causes	Institution/ Housebound	Cannot Work	Limited Work
Cognitive		6	19
Motor		4	
Cognitive & Motor	5		1
Behavioral			3
Alcoholism			2
Associated Injuries		1	
Undetermined		1	
Total	5	12	27

Associated injuries were: two spinal cord injuries, one preexisting motor deficits.

Discussion

Within our study trauma population, severe closed head injury proved to be a common cause of long term morbidity and mortality. Although the criteria for patient classification are not identical, the overall results for mortality and short term morbidity are comparable to other large series of severe head injuries. In the past, severe head injury usually was associated with a 30-50% mortality rate. Most deaths occurred early and were usually the result of the initial severe CNS insult.[1,4] Our mortality rate of 28%, with the majority of deaths from the neurological injury, again confirms these figures.

In the past, concerns have often been expressed that the intensive treatment of head injury may result in some reduction of mortality, but causes patients to survive with severe morbidity, resulting in more patients requiring chronic long term institutional care. All of the patients reported in this review received this type of aggressive, intensive treatment program. The findings in this study, however, reveal only 5% of the patients confined to home or an institutional setting and disagrees with such concerns.

The finding that almost 50% of the patients can return to work at one year and that close to 25% actually returned to full work capacity is even more encouraging. One could conclude that while head injury may cause significant disability, it appears to leave a lesser long term societal burden than many authors have predicted.

In addition, it appears that the major cause of disability is cognitive dysfunction, without motor deficit. These data suggest that the cognitively impaired can function quite well with minor modifications of their daily routine and are capable of gainful employment. With increased emphasis on early intensive neurosurgical and rehabilitative intervention, combined with an increase in interest and support from the community, many of these patients can continue to contribute to society in a meaningful manner.

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A Suggested Relationship between Sagittal Synostosis, Intracranial Hypertension and Hydrocephalus

JOHN R. MAWK, M.D.*; JAMES McCONNELL, M.D.+ and THOMAS D. FULBRIGHT, M.D.+

Three children presenting with isolated sagittal synostosis were discovered on routine CT scanning to have various combinations of internal and external hydrocephalus of mild to moderate severity. All three children underwent intracranial pressure monitoring at the time of surgery and also underwent postoperative CT scanning or ultrasonography. In all three cases, intracranial pressure was moderately elevated and was promptly relieved by sagittal or parasagittal craniectomy. Follow-up CT scanning in all three cases demonstrated partial resolution of the hydrocephalic processes. A fourth child with intracranial hypertension and sagittal craniosynostosis, but without hydrocephalus, is also discussed.

Although it is generally recognized that intracranial hypertension accompanies premature closure of multiple sutures, premature fusion of a single suture is usually regarded as a purely cosmetic problem. We recently encountered three consecutive infants with sagittal synostosis in whom the intracranial pressure was elevated, and who all demonstrated mild to moderate communicating hydrocephalus on CT scanning. We are intrigued by the possibility that craniosynostosis involving the sagittal suture in isolation may produce communicating hydrocephalus and/or significant intracranial hypertension.

Case Reports

Case 1

This nine-month-old black male was referred to Arkansas Children's Hospital for obvious, advanced sagittal synostosis. The child was neurologically normal. Skull Xrays demonstrated isolated sagittal synostosis, and CT scanning demonstrated the unexpected finding of a moderate degree of internal hydrocephalus (Figure 1A). Epidural pressure monitoring was carried out through a frontal burr hole at the time of bilateral parasagittal strip craniectomies. The child's initial intracranial pressure was 24 torr, but immediately upon completion of the procedure, intracranial pressure had fallen to 11 torr. Follow-up CT scanning eight weeks postoperatively demonstrated improvement in ventricular size (Figure 1B).

Case 2

This four-month-old white male was referred for classical sagittal craniosynostosis. The child was neurologically normal. Plain skull radiograms demonstrated premature closure of the sagittal suture only, but a CT scan demonstrated a modest degree of combined internal and external hydrocephalus. At the time of surgery, intracranial pressures were recorded from the subarachnoid space by means of a needle. Initial intracranial pressure was 276 mm. of water. Following bilateral parasagittal strip craniectomy, the ICP fell only to 176 mm. of water. The median sagittal strip of bone seemed firmly tethered to the dura in the region of the anterior fontanelle, in such a manner that the dura was indented at this position. When the strip of bone overlying the sagittal sinus was freed from the posterior margin of the anterior fontanelle, it

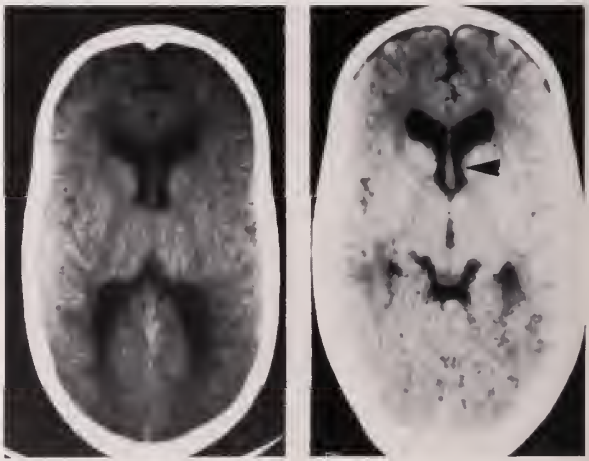

Fig. 1 (A-left) - Preoperative CT scan of Case 1 showing moderately enlarged ventricles and prominence of the subarachnoid spaces anteriorly. Fig. 1 (B-right) - Postoperative CT scan demonstrating slight decrease in ventricular size (arrowhead) and less prominent subarachnoid pathways.

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elevated four to five mm. away from the dura over the anterior two-thirds of its length. Intracranial pressure immediately decreased to 70 mm. of water. Postoperative CT scanning demonstrated diminished convexity subarachnoid spaces and static ventricular size.

TABLE
Intracranial Pressures in Sagittal Synostosis

	Hydrocephalus	Pre-Op Pressure torr	Post-Op Pressure torr
Case 1	yes	24	11
Case 2	yes	20	13--->5 (see text)
Case 3	yes	30	11
Case 4	no	22	12

Case 3

This white female was three-weeks old at the time of referral. In addition to obvious sagittal craniosynostosis there was as well clinical suspicion of possible early bilateral lambdoid synostosis. Plain skull radiograms demonstrated only premature closure of the sagittal suture. Preoperative CT scanning demonstrated a modest extracerebral collection of spinal fluid in the convexity subarachnoid space. A midline strip craniectomy was performed. Intracranial pressures were measured with the Ladd monitor. Initial intracranial pressure was 30 torr, which decreased immediately to 11 torr, following the bone removal. A postoperative ultrasound examination done eight weeks later showed partial resolution of the external CSF collections.

Case 4

This one-month-old female presented to the Arkansas Children's Hospital with isolated sagittal synostosis. Intraoperative ultrasound examination demonstrated normal ventricular size and normal subarachnoid spaces. Before craniectomy, the epidural pressure was 22 torr. After bilateral parasagittal bone removal, pressures of 12 torr were recorded.

Discussion

The literature generally regards single suture synostosis as a purely cosmetic problem. Recently, in series published by Furuya, et al.[1] and by Muakkassa, et al.[2], there has been recognition of mild to moderate hydrocephalus as a pathologic process concomitant with synostosis of various single sutures. Unfortunately, there has not been thorough documentation of intracranial pressures in these cases.

The present report illustrates three cases of hydrocephalus occurring concomitantly with isolated sagittal craniosynostosis. The fact that these hydrocephalic processes improved postoperatively demonstrates that craniosynostosis and hydrocephalus may be causally related. The most likely explanation for this proposed relationship is simple alteration of the anatomy of the subarachnoid space in the region of the pacchionian granulations, caused by the adjacent or overlying deformity of bone. Our observation in case two, in which the median strip of bone was noted to be "tethered" to the anterior fontanelle, suggests that a generalized disturbance of the median and paramedian anatomy may be operational. Since there are a number of other conditions which produce hydrocephalus by means of obstruction of the distal convexity CSF outflow or by venous compression, it should come as no surprise that sagittal synostosis may also cause hydrocephalus.

In view of our observations of elevated intracranial pressures with simple sagittal synostosis (Table), dural plication as recently recommended by Vollmer and his colleagues[3], would seem to be contraindicated. Clearly, detailed studies including pre-, intra- and postoperative intracranial pressure monitoring will be necessary to further clarify this question.

Our observations point to the need to reevaluate our possibly simplistic notions of craniosynostosis and in particular, CT scanning or ultrasonography may prove to be valuable for future evaluations of these cases.

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(Continued from page 536)

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(Continued on page 567)

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eferences:

Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.

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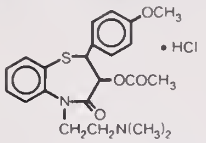

Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash
asthenia (1.2%), AV block (1.1%). In addition, the following
were reported infrequently (less than 1%) with the order of pr
tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, br dia, palpitations, congestive heart f syncope.
Nervous System:	Paresthesia, nervousness, somno tremor, insomnia, hallucinations, and an
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vo mild elevations of alkaline phosphatase, SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosen
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episo
vasospastic angina developed periods of transient asympt
asystole approximately five hours after receiving a single
dose of CARDIZEM.

The following postmarketing events have been reported
quently in patients receiving CARDIZEM: erythema multiform
kopenia; and extreme elevations of alkaline phosphatase,
SGPT, LDH, and CPK. However, a definitive cause and effect be
these events and CARDIZEM therapy is yet to be establishe

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been li
Single oral doses of 300 mg of CARDIZEM have been well tol
by healthy volunteers. In the event of overdosage or exagg
response, appropriate supportive measures should be emplo
addition to gastric lavage. The following measures may be consi

Bradycardia	Administer atropine (0.60 to 1.0 mg). If is no response to vagal blockade, admi isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed degree AV block should be treated wit diac pacing.
Cardiac Failure	Administer inotropic agents (isoprote dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levart bitartrate).

Actual treatment and dosage should depend on the severity
clinical situation and the judgment and experience of the tr
physician.

The oral/LD_{50}'s in mice and rats range from 415 to 740 n
and from 560 to 810 mg/kg, respectively. The intravenous LD
these species were 60 and 38 mg/kg, respectively. The oral L
dogs is considered to be in excess of 50 mg/kg, while lethalit
seen in monkeys at 360 mg/kg. The toxic dose in man is not k
but blood levels in excess of 800 ng/ml have not been asso
with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic (
nary Artery Disease or Angina Pectoris at Rest Due to (
nary Artery Spasm. Dosage must be adjusted to each pati
needs. Starting with 30 mg four times daily, before meals a
bedtime, dosage should be increased gradually (given in di
doses three or four times daily) at one- to two-day intervals
optimum response is obtained. Although individual patients
respond to any dosage level, the average optimum dosage r
appears to be 180 to 240 mg/day. There are no available data con
ing dosage requirements in patients with impaired renal or he
function. If the drug must be used in such patients, titration shou
carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort a
anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy** — CARDIZEM may be s
coadministered with short- and long-acting nitrates, but
have been no controlled studies to evaluate the antian
effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (
0088-1771-47) and in Unit Dose Identification Paks of 100 (
0088-1771-49). Each green tablet is engraved with MARION on
side and 1771 engraved on the other. CARDIZEM 60-mg sc
tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in
Dose Identification Paks of 100 (NDC 0088-1772-49). Each ye
tablet is engraved with MARION on one side and 1772 on the o

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(Continued from page 564)

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FAMILY PRACTICE — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PRACTICE OPPORTUNITIES — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

INTERNIST — BC/BE internist needed to join four internists in multispecialty group in NE Wisconsin. Competitive salary and benefits. Both subspecialty and general medicine inquiries welcome. Send C.V. to Neil Binkley, M.D., 1510 Main Street, Marinette, Wisconsin 54143 Phone: 715-735-7421.

TWELVE-PHYSICIAN multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

FAMILY PHYSICIAN: Immediate opening for a Family Physician to join a 23-physician multispecialty group in St. Cloud, Minnesota. This opportunity affords a Family Practice Physician a great financial and working opportunity. St. Cloud is one of the fastest growing communities in the State of Minnesota and is home to three major colleges. It is geographically located to provide quick access to the Metropolitan Twin Cities area. The St. Cloud Community has excellent school systems available to the individual physician and their family members. The St. Cloud area provides a quality recreational and cultural setting for the Physician to enjoy as the result of a fine call schedule associated with this opportunity. If interested in this excellent opportunity, please call collect either Dr. LaRue Dahlquist, President, and/or Daryl Mathews, Administrator, at (612) 251-8181 or send curriculum vitae to: St. Cloud Medical Group, 1301 West St. Germain Street, St. Cloud, Minnesota, 56301.

FAMILY PRACTICE ORIENTED multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

FAMILY PRACTITIONER – Needed by Medical Group for a branch clinic in Southern Minnesota. Back-up services would be provided by the medical group. Good opportunity to be on your own with advantages of Group Practice Benefits, to enable you to a stimulating practice and enjoyable family life. First year salary guaranteed with full partnership after one year. If interested, please send your curriculum vitae to Minnesota Medicine (746), 2221 University Avenue S.E. #400, Minneapolis, MN 55414.

WANTED: FAMILY PRACTITIONER, OB/GYN. Group practice. Central Minnesota. Starting salary $45,000. Write Minnesota Medicine (755), 2221 University Ave. S.E., #400, Minneapolis, MN 55414.

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Gastroenterologist or Internist with subspecialty interest in gastroenterology (have all the equipment). Obstetrician/Gynecologist, General Surgeon, Internist, Family Practice in 18 physician multispecialty group located in ideal community of 26,000. Ninety minutes from Twin Cities, excellent schools, etc. The clinic is a modern, well equipped facility providing attractive guarantee and early partnership, plus other excellent benefits. Contact Richard W. Golly, Austin Medical Clinic, P.A., 101 N.W. 14th Street, Austin, MN 55912, (507) 433-7351.

Family Practitioner: BC/BE to join three board certified family physicians in a growing rural practice. Enjoy very competitive salary and benefits, excellent facilities and full privileges in adjacent city owned hospital. Contact Carl Melling, M.D., Melrose Clinic, P.A., 603 West Main Street, Melrose, MN 56352, (612) 256-4228 (office) or (612) 256-7227 (home).

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General practitioner and family would like to move back to Minnesota. Twenty-eight years of experience. Worked ten years in a general hospital, with four years approved general practice residency and seventeen and one-half years of private practice in Indiana. Perferably limited O.B. Have Indiana and Minnesota medical license. Write to: F. Arive, M.D., P.O. Box 36067, Oaklandon, IN 46256.

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Family physicians, ophthalmologist, orthopedist needed to join 30 physicians of the Olmsted Medical Group of Rochester. Opportunities available in main office and satellites. Exceptional salary and benefit package provided in a choice professional and cultural community. Contact James E. Hartfield, M.D., Medical Director, 210 Ninth Street SE, Rochester, MN 55903 (507-288-3443).

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CITY OF LAKEFIELD, MN is seeking a Family Practitioner for solo/partnership practice. Excellent salary guarantee, free clinic space. Contact Meryl Ostwald, Mayor or Loretta Ulferts, Administrator, Lakefield Municipal Hospital, Lakefield, MN 56150, (507) 662-5457 or (507) 662-5295.

SOUTHERN MINNESOTA General Practice (solo) offered for sale or rent. Buyer should be Board eligible. Many services offered in community. Easy terms, negotiable. Please direct inquiries to Lonnie R. Trasamar, Elmore, MN 56027, (507) 943-3131.

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FAMILY PRACTICE OPPORTUNITIES IN ROME, NEW YORK: Family Practitioner needed. Rome is located in the heart of Central New York just 45 minutes from Syracuse. This historic city is noted for its low crime rate, clean environment, and excellent educational opportunities. A 220 bed, HCA managed facility services an area of 90,000 people. The entire medical staff of 52 physicians recognizes the need for additional Board Certified Family Practitioners. There are no HMOs in the Rome area and our primary care practitioners are aging. There is virtually an unlimited demand for private practitioners offering primary care services. For more information call Michael J. Schwartz, Administrator, (315) 338-7470.

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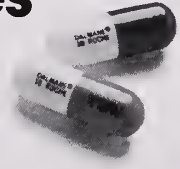

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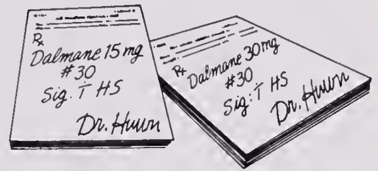
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Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Employ usual precautions in severely depressed patients, or in those with latent depression or suicidal tendencies, or in those with impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatase, and paradoxical reactions, *e.g.*, excitement, stimulation and hyperactivity.

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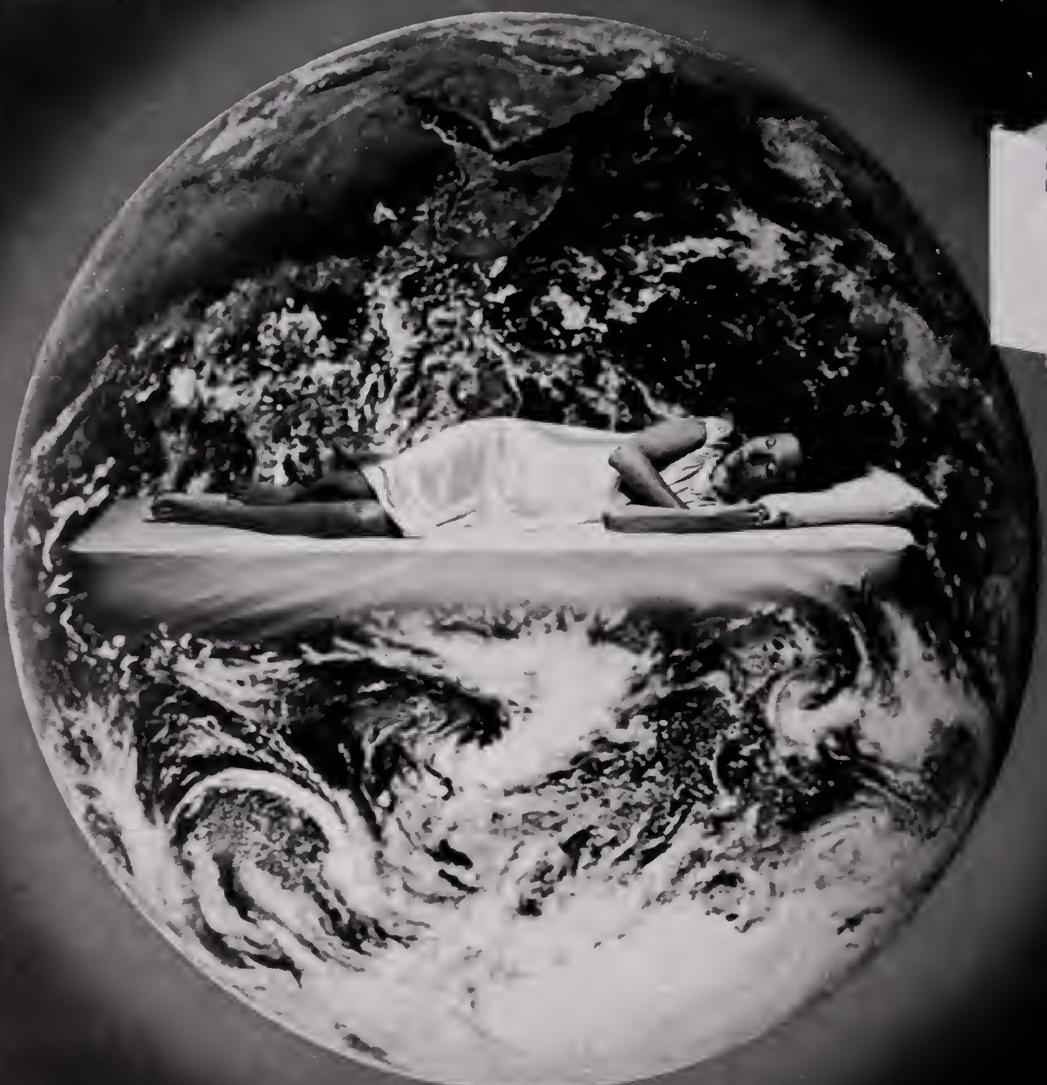

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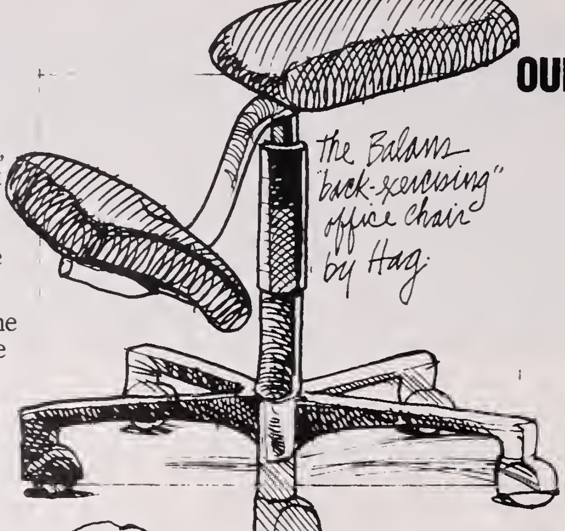

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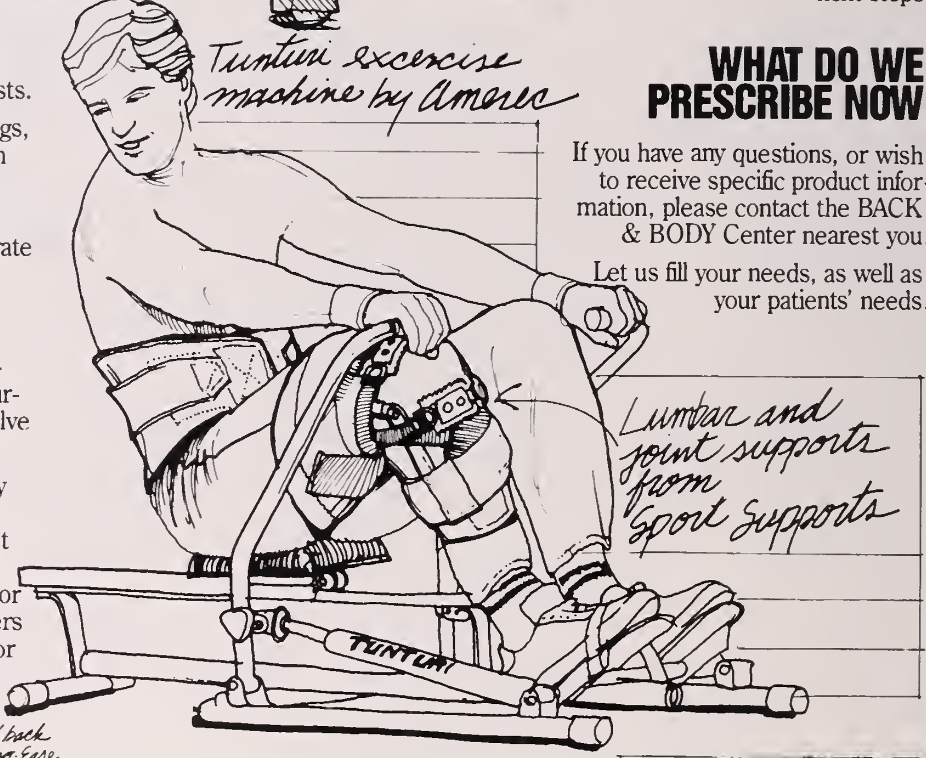

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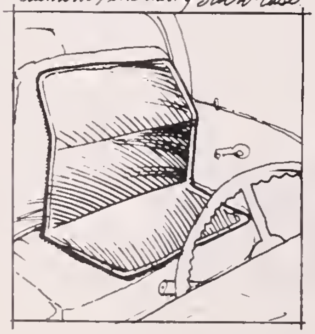

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President's Letter

Legislative Lobbying

A Job Well Done

Peggy Craig

M. Elizabeth Craig, M.D.
President
Minnesota Medical Association

The 1985 legislative session and special session ended with Minnesota physicians and organized medicine being served well by its deliberations. Several of our public health initiatives, such as mandatory seat belts and the 21-year-old drinking age, were not enacted but will be actively reconsidered in the next session.

A number of bills strongly supported by and favorable to Minnesota physicians were passed, including:

- The restructuring and funding of the Board of Medical Examiners. This will give Minnesota a more effective Board with greater control and greater public credibility.
- Bills requiring reporting of child abuse, medical neglect, and suspicious wounds.
- Most important, the 21 million dollar bill to increase the MA and GAMC payments to physicians at the 50 percentile of 1982 usual and customary fees from the 50 percentile of 1978 (GAMC) and 1979 (MA) fee level.

The Omnibus Non-Smoking Bill, not passed in the regular session, was enacted in the special session, thanks in great part to our lobbying efforts to include that bill on the special session agenda.

A number of bills opposed by MMA were defeated, such as the "Damage for Mental Anguish in a Wrongful Death" bill which would have further darkened the professional liability outlook by allowing blood relatives to sue for "mental anguish" in a wrongful death. The bill including chiropractic services for GAMC payments was also defeated.

We tend to accept the outcome of the legislative action without realizing the great amount of work involved in reaching our goals. Our success did not just happen. It was the result of many long, tedious hours of lobbying and individual communication with senators and representatives by our MMA staff, members of the legislative committee, auxiliary members, and key legislative contacts across the state. Many of us accept the legislative results as the luck of the draw without putting forth the effort to make our own wishes known. We all have representatives, and we all have senators who are not only willing but enthusiastically eager to listen to us.

Historically, the medical involvement in the legislative process has been carried out, for the most part, by a very few of our members and by the dedicated, untiring efforts of our MMA lobbying staff. Each of MMA's positions and initiatives is extensively researched and developed by the MMA staff before being presented in legislative committee hearings and to individual key legislators. The successful results of the last session document its effectiveness. We owe our staff our unqualified gratitude for a job well done.

The 1986 legislative session convenes in February. Proposed agenda items will be bills dealing with professional liability plus continued efforts in public health issues. It is not too early to become a key legislative contact. Talk to your legislator and express your thoughts, take him or her to lunch and maintain your contact. Our legislators appreciate and encourage this kind of effort.

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Renal Capsular Leiomyoma Causing Painless Microscopic Hematuria

An Unusual Manifestation of a Rare Tumor

AZAM ANSARI, M.D.*; WILLIAM H. CARD, M.D.*; and QUENTIN M. ANDERSON, M.D.*

A benign leiomyoma arising from the external surface of the capsule of the left kidney and yet causing painless microscopic hematuria was correctly diagnosed and successfully resected during life in a 65-year-old man. A concise diagnostic approach to microscopic hematuria in clinical practice along with a brief review of renal leiomyomas is presented.

Renal leiomyomas large enough to be of clinical significance are extremely rare in the clinical nephrology practice. Less than 50 patients with such tumors have been reported. The majority were discovered at autopsy in women over 40 years of age.[1] However, when encountered during life, they often mimic malignant tumors and depending on the location can be confirmed only after surgical removal. Below, we describe an illustrative patient.

Case Report

A 65-year-old man was admitted to the hospital for investigation of persistent painless microscopic hematuria. He denied any fever, dysuria, pain, or weight loss. Physical examination was negative. Intravenous pyelogram (Figure 1) shows a lobular mass, adjacent to the medial aspect of the upper pole of the left kidney, producing dilatation of its infundibulum and calices. The density of the mass is approximately the same as the parenchyma of the kidney. Figure 2 is a renal ultrasound which confirms the presence of a large mass, measuring 7-8 cm in diameter, with somewhat irregular margins arising from the anteromedial aspect of the left kidney. Lack of any internal echoes suggests that it is a solid rather than a cystic mass. Figure 3 shows a large mass medial to the left kidney with displacement of the renal pelvis due to extrinsic pressure. A few abnormal tortuous appearing blood vessels were seen supplying the tumor, but no evidence of neovascularity or tumor stain is evident. Computerized axial tomography was not performed, because it was felt that enough diagnostic information had already been accumulated to warrant surgery.

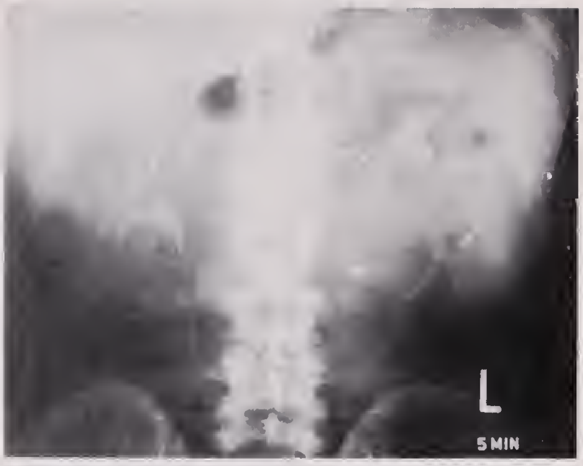

Fig. 1 shows an excretory urogram which demonstrates a lobular mass, adjacent to the medial aspect of the upper pole of the left kidney, producing dilatation of its infundibulum and calices. The density of the mass is approximately the same as the parenchyma of the kidney.

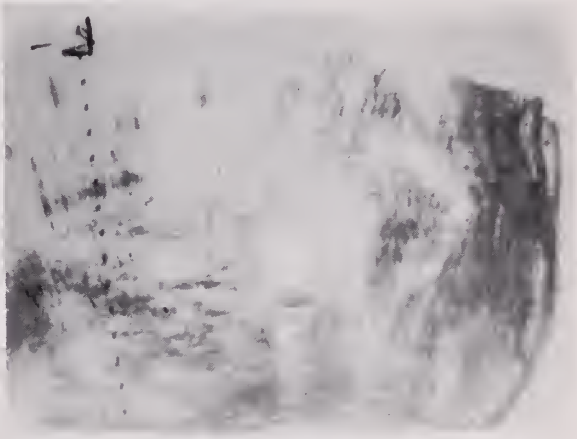

Fig. 2 is a renal ultrasound which confirms the presence of a large mass measuring 7-8 cm in diameter with somewhat irregular margins arising from the anteromedial aspect of the left kidney. Lack of any internal echoes suggests that it is a solid rather than a cystic mass.

On exploration the renal mass was obvious, and several enlarged lymph nodes were

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*Departments of Medicine, Surgery and Radiology, Metropolitan Medical Center, Minneapolis, Minnesota.

Requests for reprints should be addressed to Azam Ansari, M.D., Suite M04, 825 South Eighth Street, Minneapolis, Minnesota 55404.

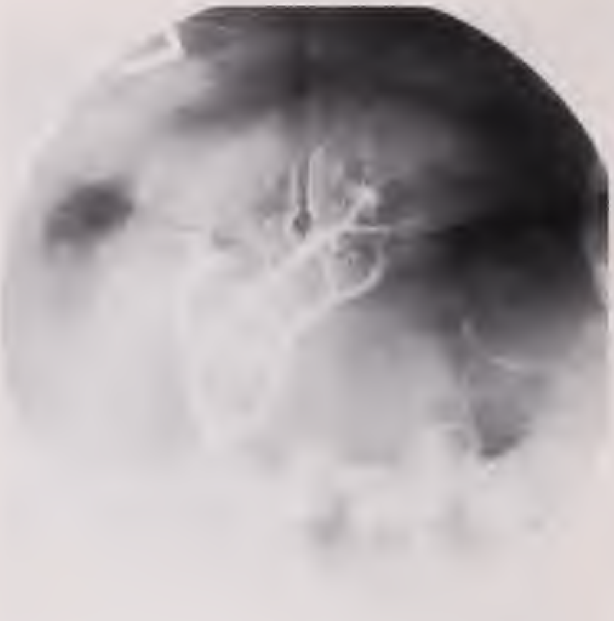

Fig. 3 is a selective renal arteriogram which shows a large mass medial to the left kidney with displacement of the renal pelvis due to extrinsic pressure. A few abnormal appearing tortuous blood vessels were seen supplying the tumor, but no evidence of neovascularity or tumor stain is evident.

noted. Radical nephrectomy with lymph node dissection was performed, following which patient made uneventful recovery. Figure 4 shows the longitudinal section of the resected specimen. The mass measured 7 cm in diameter and was reddish-yellow in color. There were foci of necrosis and hemorrhage in the substance of the tumor which was encapsulated and originated from the renal capsule. The tumor was indenting the pelvis of the left kidney which was congested, hyperemic, and the obvious source of persistent painless microscopic hematuria. The cortex and medulla of the kidney were not involved. Histologically, the tumor mass was composed of interlacing bands and fasciculi of spindle shaped cells without any nuclear pleomorphism or mitotic figures. Lymph nodes were free of tumor. Final diagnosis was benign leiomyoma of the left kidney arising from its capsule. Following surgery microscopic hematuria subsided.

Discussion

The diagnostic evaluation of microscopic hematuria is usually begun by excretory urography. If a renal mass is found, then ultrasound could be used to differentiate cystic from the solid. Further confirmation may be obtained by CAT scan, needle puncture, and renal arteriography. The current practice is to bypass cyst puncture and arteriography in favor of CAT scan. Many surgeons would be willing to operate on CAT scan findings alone, although arteriography still has its proponents. If renal mass is not evident, then other investigations such as cystourethroscopy, retrograde urography and percutaneous renal biopsy may be needed for further evaluation.

Leiomyomas of the kidney can be of two different types: (1) Small subcortical lesions which are often multiple, average less than 5 mm in diameter, remain clinically silent, and most commonly encountered at unrelated surgery or autopsy as incidental findings. (2) Large solid neoplasms which arise from the capsule or the pelvis of the kidney, occur infrequently, grow slowly, and very rarely may cause hematuria. Calcification, cystic, and malignant degeneration can occur within the tumor. On angiography these tumors lack neovascularity or tumor stain.[2] Experimentally, such tumors have been induced in newborn rats with carcinogen methylazoxymethanol, suggesting a possible carcinogenic cause.[3]

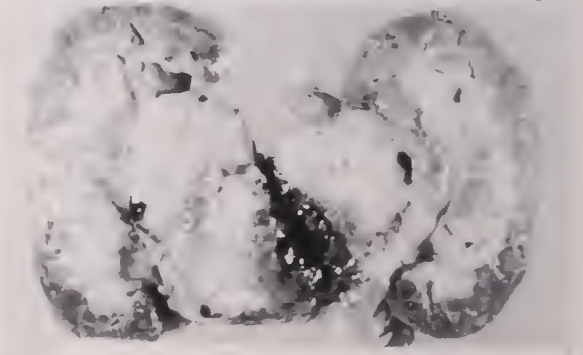

Fig. 4 is a longitudinal section of the resected specimen. The mass measured 7 cm in diameter. It was encapsulated and reddish-yellow in color. Foci of necrosis and hemorrhage in the substance of the tumor can be seen. The pelvis of the left kidney appeared congested and hyperemic, and was the source of persistent microscopic hematuria.

Large solitary leiomyomas of the kidney, whether arising from the capsule or from the renal pelvis, are best managed by radical nephrectomy, not only because of the overwhelming odds in favor of malignancy prior to final confirmation of the pathological diagnosis, but also because of the high incidence of malignant degeneration and the difficulty in histological interpretation of the malignant potential of these mesenchymal tumors.[4] However, once histologically confirmed that the tumor was benign, prognosis remains excellent.

Acknowledgment

The authors wish to express their sincere thanks and appreciation to Ms. Rebecca Nelson for technical assistance and to Ms. Karleen Sheppard for preparation of the manuscript.

References will be found on page 592.

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1. Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.
2. Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. Chest 78 (July suppl):234-238, 1980.

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2/84

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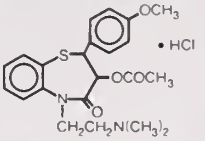

Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given, a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (asthenia (1.2%), AV block (1.1%). In addition, the following were reported infrequently (less than 1%) with the order of pre tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, bra dia, palpitations, congestive heart f syncope.
Nervous System:	Paresthesia, nervousness, somnol tremor, insomnia, hallucinations, and am
Gastrointestinal:	Constipation, dyspepsia, diarrhea, von mild elevations of alkaline phosphatase, SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosens
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episod vasospastic angina developed periods of transient asympto asystole approximately five hours after receiving a single 6 dose of CARDIZEM.

The following postmarketing events have been reported quently in patients receiving CARDIZEM: erythema multiforme kopenia; and extreme elevations of alkaline phosphatase, SGPT, LDH, and CPK. However, a definitive cause and effect bet these events and CARDIZEM therapy is yet to be established

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been lin Single oral doses of 300 mg of CARDIZEM have been well tole by healthy volunteers. In the event of overdosage or exagge response, appropriate supportive measures should be employ addition to gastric lavage. The following measures may be consid

Bradycardia	Administer atropine (0.60 to 1.0 mg). If is no response to vagal blockade, admi isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed degree AV block should be treated with diac pacing.
Cardiac Failure	Administer inotropic agents (isoproter dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levarte bitartrate).

Actual treatment and dosage should depend on the severity o clinical situation and the judgment and experience of the tre physician.

The oral/LD_{50}'s in mice and rats range from 415 to 740 m and from 560 to 810 mg/kg, respectively. The intravenous LD these species were 60 and 38 mg/kg, respectively. The oral LD dogs is considered to be in excess of 50 mg/kg, while lethality seen in monkeys at 360 mg/kg. The toxic dose in man is not kn but blood levels in excess of 800 ng/ml have not been associ with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic C nary Artery Disease or Angina Pectoris at Rest Due to C nary Artery Spasm. Dosage must be adjusted to each patie needs. Starting with 30 mg four times daily, before meals an bedtime, dosage should be increased gradually (given in div doses three or four times daily) at one- to two-day intervals optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage ra appears to be 180 to 240 mg/day. There are no available data conc ing dosage requirements in patients with impaired renal or hep function. If the drug must be used in such patients, titration shoul carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort ac anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy** – CARDIZEM may be sa coadministered with short- and long-acting nitrates, but th have been no controlled studies to evaluate the antiang effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (N 0088-1771-47) and in Unit Dose Identification Paks of 100 (N 0088-1771-49). Each green tablet is engraved with MARION on side and 1771 engraved on the other. CARDIZEM 60-mg sco tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Dose Identification Paks of 100 (NDC 0088-1772-49). Each yel tablet is engraved with MARION on one side and 1772 on the ot

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Retroperitoneal Liposarcoma

CHARLES H. MANLOVE, M.D., F.A.C.S.* and
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Retroperitoneal liposarcomas frequently present with large abdominal masses. The diagnosis, treatment, prognosis, and histopathology of these rare tumors are discussed. Despite the huge size of these tumors, the symptoms may be vague, and clinical findings are often misleading. A specific diagnosis can frequently be suspected after reviewing plain films of the abdomen, contrast GI studies, intravenous pyelograms, and CAT scan studies. An exact diagnosis cannot be made without gross and microscopic examination of the tumor. The ideal treatment consists of complete excision of the tumor together with surrounding structures that may be invaded. Preoperative radiation and postoperative chemotherapy have been used individually and together with some success. Where tumors cannot be completely excised, debulking the tumor provides a better chance of palliation. A high incidence of local recurrence of retroperitoneal sarcomas exists even after apparent total removal of the tumor.

Two cases are presented illustrating how large retroperitoneal liposarcomas can become. The cases also demonstrate some unusual postoperative complications including gastric stasis, delayed postoperative hemorrhage, pulmonary infarction, and sepsis.

Patients with a retroperitoneal liposarcoma are encountered infrequently in the course of a surgical practice, but when seen the problem can be quite striking and often challenging. Binder[1] reported that liposarcomas comprise between 7.5% and 25% of soft tissue sarcomas, and those in the retroperitoneal area make up about 0.1% of all cancers. Although these tumors can occur in any area where fatty tissue exists, approximately one-third are located in the retroperitoneal area, often extending into the perirenal fat. Liposarcomas of the head and neck are extremely rare. Saunders[2] reviewed the literature in 1979 and found only 25 head and neck cases previously reported, to which he added four additional cases. Evans et al.[3] noted that the majority of the retroperitoneal liposarcomas occur in the 5th and 6th decade and that the sex distribution of these tumors is equal. In their series of eight cases at the Mayo Clinic, the mean size was 16 cm in diameter, the largest being 22 cm and the smallest 6 cm in diameter.

Diagnosis

Many patients with this disease come to their physician complaining of a large protruding, non-tender abdomen that has been getting progressively larger over a relatively long period of time. A complete history and physical examination frequently will cause the physician to suspect the diagnosis of a liposarcoma, but differentiating this lesion from others in the area may be difficult. If the mass is huge, an ovarian cyst, a bowel obstruction, or ascites would be other likely initial considerations. A number of studies can be done which will help localize the lesion and may suggest the diagnosis. Plain films of the abdomen, barium enema, IVP, and upper gastrointestinal contrast radiographic examinations are helpful. CAT scan studies will help differentiate these lesions from those in the true peritoneal cavity. The exact diagnosis of a liposarcoma can only be made with certainty by biopsy or excision of the tumor with subsequent microscopic examination.

Treatment

The ideal way to treat this lesion is to completely excise the tumor, although this may not be practical or possible in far advanced cases where the tumor is of such immense size that it has extended into and around structures that cannot be sacrificed. These tumors frequently have a pseudocapsule which allows them to be excised or enucleated with careful blunt and sharp dissection.

Although the initial tumor may often be removed completely with a minimal amount of difficulty, recurrences may be extremely difficult or impossible to eradicate. Metastases do occur, but this is usually a slow process. Radiotherapy and/or chemotherapy has also been tried, but successful results have not often been documented. Preoperative radiation is thought to make some primary inoperable tumors subsequently resectable.[4] High dosage radiation to the retroperitoneal area may be impossible to deliver with safety, and these anaplastic tumors may indeed be radioresistant. The slow growing, well differentiated myxoid type of liposarcoma is relatively radiosensitive, while the more anaplastic faster growing tumors are relatively radioresistant.[5 6] Binder[1] noted that recurrent liposarcomas are less radiosensitive than primary tumors. Radiation seems to be more successful when there are smaller amounts of gross tumor, so debulking a tumor that cannot be completely removed provides a better chance of palliation or cure. Other surgeons[7] have suggested using radiation routinely postoperatively in the hope that this will prevent or minimize metastases, not just for the tumors which cannot be completely excised, but also for the patient who was thought to have had the anaplastic lesion totally removed.

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Case Reports

Case 1

A frail 66-year-old female who was 62 inches tall and weighed 126 pounds presented herself initially on November 2, 1980, complaining only of intermittent episodes of nocturnal diarrhea. The diarrhea started about four weeks prior to this examination and had not responded adequately to home remedies. Most of the diarrhea occurred between 2 A.M. and 6 A.M. and interrupted her sleep, a phenomenon which bothered her more than the diarrhea itself. On interrogation, she admitted that her abdomen had been getting progressively larger during the previous two years. This, however, was not giving her much distress, and she was more concerned about the diarrhea interfering with her sleep. She had no melena, nausea, or vomiting. In 1969 she had undergone a resection of a perforated sigmoid colon. Following this, she had no bowel problems until the present time. Her general health otherwise was good, but she stated that despite her abdomen getting larger, she had not really gained any weight. The chief findings on physical examination were those of a tremendously distended abdomen containing a large palpable mass that was excessively firm in the right lower quadrant. There was no unusual tenderness, guarding or evidence of intraperitoneal fluid. The liver was not grossly enlarged, but evaluation was difficult because of the huge abdominal distension. The hemoglobin was 12.0 grams, and the WBC was 9,000 with a normal differential. A urinalysis was normal. The chest Xray was within normal limits except for the right hemidiaphragm which was markedly elevated. A barium enema showed a normal mucosal pattern, but the entire right colon and small bowel were pushed to the left of the midline by the mass. CAT scan studies showed the mass to be in the retroperitoneal area and filled the entire right side of the abdominal cavity. The radiologist's primary diagnosis was retroperitoneal liposarcoma.

The patient was admitted to Divine Redeemer Memorial Hospital, and on November 11, 1980, she was explored. The abdomen was opened through a long midline incision and a huge retroper-

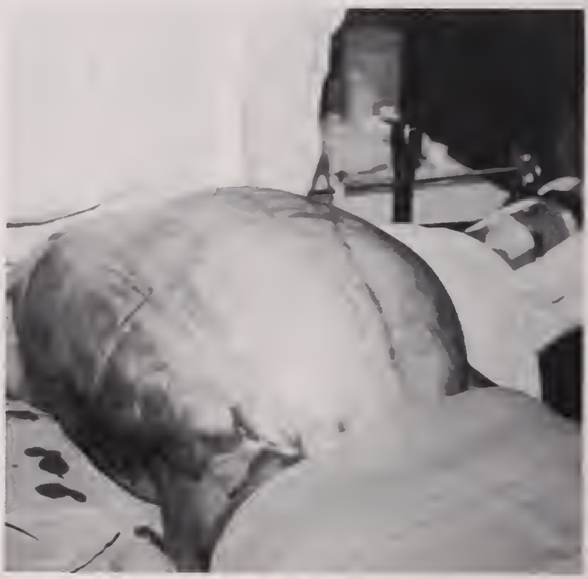

Fig. 1 - (Case 1) Photograph of patient lying on table preoperatively, showing huge size of abdominal mass.

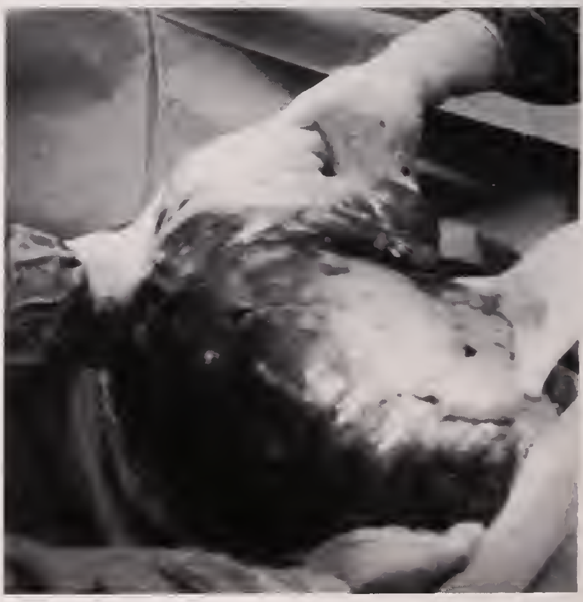

Fig. 2 - (Case 1) Photograph of tumor as it was delivered through the incision prior to actual removal.

itoneal fatty tumor, weighing 33 pounds, was delivered and excised (Figures 1 and 2). The tumor was entirely retroperitoneal and surrounded the right kidney which had to be removed. The lesion was not invading but was firmly adherent to the capsule of the undersurface of the right lobe of the liver. After pealing the liver capsule and adherent tumor away from the surface of the liver, there was heavy bleeding from the raw surface of the liver. This bleeding was eventually controlled with cautery, ligation, packs and Ativan®, and a Jackson-Pratt tube was placed to drain this area. Extensive small bowel adhesions had to be divided to allow adequate closure of the abdominal wall.

Histopathology

The histopathological report of this case showed a massive tumor of the retroperitoneum measuring 60×41×19 cm. The tumor weighed 15 kilograms, and the right kidney was adherent to the inferior surface. The mass was lobular, moderately firm and pale yellow, and the cut surface had a myxoid appearance with central soft hemorrhagic and necrotic areas present.

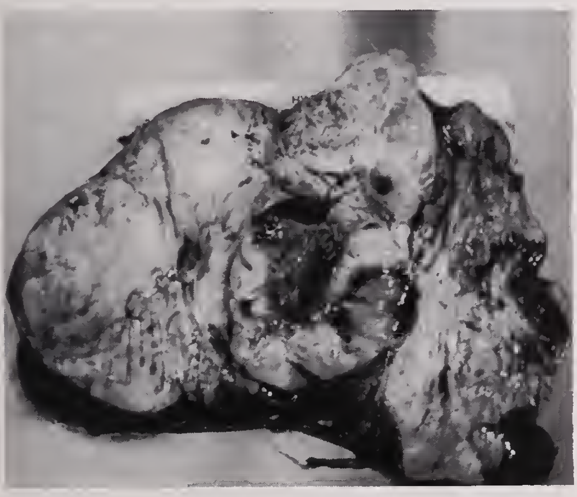

Fig. 3 - (Case 1) Gross specimen sectioned in half, demonstrating hemorrhagic and necrotic areas of the liposarcoma.

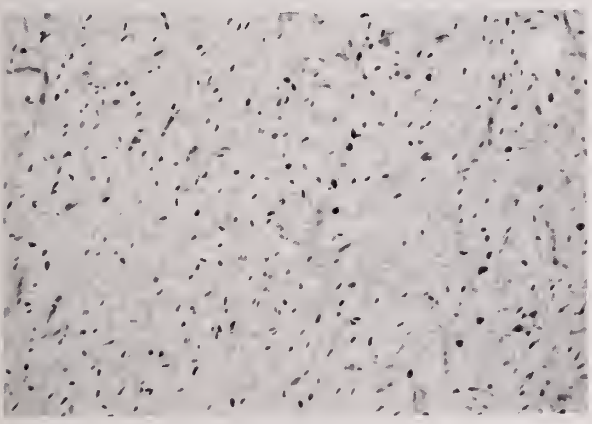

Fig. 4 - (Case 1) Microscopic appearance of myxoid liposarcoma - H and E stain, x 400.

The microscopic appearance varied from highly cellular areas containing predominantly spindle cells to rather acellular myxoid foci with stellate and round cells. Numerous mitoses were present in the more cellular areas, and there was prominent vascularity. Occasional multinucleated giant cells were seen (Figures 3 and 4).

Using the World Health Organization Classification, this tumor was diagnosed as a "cellular myxoid liposarcoma".[8-10] This tumor was above average in size for reported retroperitoneal mesenchymal tumors, and the large size may have contributed to the postoperative complications of intestinal obstruction.

Postoperative Course

Postoperatively this patient developed a complete mechanical obstruction of the duodenum which required a second laparotomy on November 20, 1980. This obstruction was due in part to a hematoma that developed in the wall of the duodenum and in part to the stomach flopping over into the huge space to the right of the spine that had been previously occupied by the tumor. There were extensive small bowel adhesions that had also formed and had to be lysed. A gastrojejunostomy was performed using the stapling devices to bypass the obstructed area in the duodenum. Dextran 70 was left in the peritoneal cavity following this procedure in the hope that subsequent adhesion formation would be decreased.

On the 26th of November, the patient developed a complete efferent loop obstruction at the gastrojejunal stoma. Nasogastric returns ranged between 2500 to 3000 cc per day, and hyperalimentation was implemented. The patient was returned to the operating room for her third laparotomy, and a second gastrojejunostomy was performed on the efferent loop distal to the first one. Because of the edema in the stomach the second anastomosis was done by hand using sutures to create a large and adequate stoma.

Following this last procedure, the patient developed signs and symptoms suggesting a right subphrenic or subhepatic abscess, with a daily spiking temperature of 104F, and a white blood count of 30,000. A lung scan was compatible with a large pulmonary infarct of the right lower lobe, and the patient was heparinized. On the 3rd of December, she was once more taken back to the operating room, this time for an exploration of the right subhepatic and subphrenic spaces. Although fluid was encountered in both of these areas, no purulent material was present, and cultures showed no bacterial growth. These areas were drained, and the patient was started on steroids, electrolytes, and antibiotics. On the 5th of December, her hemoglobin dropped to 6.0 grams, and large quantities of bright red blood drained from a Jackson-Pratt tube that had been previously placed in the subhepatic space. The heparin was neutralized with protamine sulfate, and the patient was given aqua mephyton and blood transfusions. The bleeding persisted for approximately 48 hours and then subsided spontaneously. She continued to have mild intermittent bleeding from the right subhepatic space for several more days, but this was easily controlled with transfusions, and her hemoglobin subsequently stabilized at 15 grams.

The most perplexing problem that persisted from this time until she was discharged was one of delayed gastric emptying. The patient was gastroscoped twice, and it was noted that there was no further obstruction of the gastrojejunostomy, and that the efferent loop was open. With the use of metachlopramide the patient finally developed satisfactory gastric emptying and was discharged from the hospital on December 23, 1980.

Following her discharge from the hospital this patient did not eat well and subsequently again developed delayed gastric emptying. In addition to nausea and vomiting, she developed severe diarrhea, weight loss, and fever. She was rehospitalized, and the diarrhea gradually subsided with the use of Lomotil, nasal gastric intubation, IV fluids, and antibiotics. Her gastric emptying slowly improved, and after about three weeks she was discharged from the hospital for the last time. She was then eating satisfactorily, and had no further emesis or diarrhea. By the 22nd of May, 1981, she was doing well and her weight was 101 pounds. She was eating well, was up and about and was completely able to take care of herself. She has continued to progress satisfactorily, and when last evaluated on June 15, 1983, she had no evidence of recurrent disease.

Case 2

A 72-year-old widow first noted a mass on the left side of the abdomen about two days prior to admission to Divine Redeemer Memorial Hospital on June 7, 1982. The mass was associated with slight tenderness, nausea, and vomiting. Her general health in the past had been good, and she had had no previous significant illnesses or operations. Physical examination was entirely within normal limits except for a mass in the left flank, which started below the costal margin and extended down to the brim of the pelvis on the left side. It was moderately firm and slightly tender on palpation. There was no abdominal rigidity, and the liver could not be palpated. The hemoglobin was 11.8 grams, and the white count was 10,200 with 79% PMNs and 12% Bands. The urinalysis was normal, and the fasting blood sugar was 154.

A flat plate abdominal Xray showed a mass in the left upper quadrant consistent with a renal mass, but the IVP showed the mass to be posterior to the kidney, with the kidney being displaced upwards and to the midline. The ureter was normal, although it was also displaced. A colon Xray was normal except for a mass that displaced the colon anteriorly and to the right in the region of the splenic flexure.

This patient was operated on the 10th of June, 1982, at which time a huge hemorrhagic retroperitoneal mass including the left kidney was removed. The tumor surrounded the lower half of the kidney and grossly invaded this structure but did not involve the adrenal gland. The pathological report showed a 400 gram partially necrotic hemorrhagic mass of adipose tissue and a 146 gram necrotic left kidney. The final pathological diagnosis in this case was a well differeniated retroperitoneal (myxoid) liposarcoma with an infarcted left kidney and large quantities of retroperitoneal clot.

This patient had a smooth postoperative course with no significant problems or complications and had excellent wound healing. A twelve month postoperative evaluation showed that the patient was feeling very well and had no evidence of recurrent disease.

Prognosis

The overall long term outlook in this disease is discouraging. Binder[1] reviewed a series of local recurrences following surgical resection of retroperitoneal liposarcomas and noted a recurrence rate varying from 20% to 80%. The most important factor influencing the local recurrence rate is the adequacy of the initial excision of the tumor with recurrence rates being two to four times higher with local excision than with radical removal. Over half of the patients who develop local recurrences also develop distant metastases. If local recurrence does occur, the probability of the patient dying of liposarcoma is doubled.

Bryant et al.[11] recommend computerized axial tomography scanning as part of the followup evaluation postoperatively at three months and then at yearly intervals for three years thereafter because of the high incidence of recurrence and the difficulty of detecting recurrent disease early. In their series of nine patients who underwent "complete resection", local recurrence later developed in five.

Storm et al.[12] showed that retroperitoneal sarcomas have a high incidence of local recurrence even after apparent total removal. They used preoperative Adriamycin $^{(R)}$ along with surgical resection, and in ten cases, 60% were disease free at 23.5 months median follow-up examination, suggesting that further adjuvant chemotherapy studies be done. Cody et al.[13] reported their experience in 158 patients who had retroperitoneal sarcomas. Using adjuvant chemotherapy and surgery, an increased disease free interval was suggested, but the five-year disease free rate was only 22% in their series. Adjuvant radiation therapy has resulted in lower recurrence rates, and in some cases prolonged free intervals have been noted before recurrence does occur.

Combining both preoperative chemotherapy and postoperative radiation therapy with surgery might yield better five and ten year disease free and total survival rates. Although retroperitoneal liposarcomas are not frequently encountered, randomized studies using adjuvant chemo- and radiotherapy along with aggressive surgical removal of the tumor should be done to determine if this mode of therapy will indeed improve long term results.

Summary

Two cases of huge retroperitoneal liposarcoma are presented with a brief discussion concerning the diagnosis, treatment, complications, and prognosis. Long term survival rates (five and ten years) are relatively poor even with aggressive therapy, which should be considered in all cases since palliation produces dismal results. The most important factor determining the final result is the thoroughness of the initial primary operation, but with combined preoperative chemotherapy and postoperative adjuvant radiotherapy, long term disease free and overall survival rates may be significantly improved.

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From ABO to HTLV
Changing Trends in Blood Transfusion Safety

ROSLYN YOMTOVIAN, M.D.*

The possibility of safe blood transfusion therapy is rooted in Landsteiner's landmark description of the ABO blood group system in 1901. During the ensuing decades, additional blood group systems were described, blood preservation techniques were refined, and newer procedures for compatibility testing were developed. Each of these strides brought with it the promise of safer and more efficacious transfusion therapy. The safety of transfused homologous donor blood has, however, been repeatedly called into question during the past 30 years with the discovery of a host of blood transmissible viral agents. These agents include: Hepatitis B Virus (HBV), Non-A, Non-B Hepatitis Virus(es) (NANB), Cytomegalovirus (CMV), Epstein-Barr Virus (EBV), Adult T-cell Leukemia Virus (Human T-cell Leukemia-Lymphoma Virus-I, (HTLV-I), and the Acquired Immune Deficiency Syndrome (AIDS) Virus (HTLV-III and/or LAV). While each of these viruses is capable of inducing serious morbidity and mortality in a susceptible donor, this review will focus on the most recently described of these agents, those of the HTLV group.

The first member of the Human T-cell Leukemia-Lymphoma Virus Group (HTLV-I) was isolated by Gallo's group at the NCI in 1978 from the T-lymphocytes of an adult black male residing in the Southeastern United States. He had a clinically aggressive cutaneous T-cell lymphoma.[1] This patient's clinical course closely resembled a new disease pattern first described in Japan in 1977. The disease, referred to as adult T-cell leukemia, is characterized by an aggressive clinical course, lymphadenopathy, hypercalcemia, cutaneous and central nervous system involvement and a leukemic blood picture with morphologically bizarre blasts of a mature helper T-cell type. It was soon realized that the malignant or transformed helper T-lymphocytes of these Japanese patients harbored HTLV-I viral genetic material and that their sera contained HTLV-I specific antibodies.[2] In the interim, epidemiologic studies have shown HTLV-I to be endemic to the Caribbean basin, parts of South America, the Southeastern Islands of Japan, Africa, and to a limited extent, the rural black population of the Southeastern United States. Recent speculation is that this virus may have evolved in Africa from a distant primate relative, the bovine leukemia virus.[3]

Seroepidemiologic studies of family members of affected patients have revealed a high intrafamilial incidence of HTLV-I antibodies, often in the total absence of clinical disease.[3] Indeed, a spectrum of disease associated with HTLV-I infection exists ranging from chronic, asymptomatic carriers to a smoldering chronic form to the typical acute form. The exact mechanism by which the HTLV-I virus produces malignant transformation is not known. It is hypothesized that immunological status, age, genetic and environmental conditions are all important parameters. Recently, two cases of malignant transformation have been described in patients previously well but known to have HTLV-I antibodies for five to 10 years.[2] In addition, it has been demonstrated that the helper T-lymphocytes of seropositive but clinically normal, unaffected individuals can release HTLV-I viral particles *in vitro* when co-cultured with normal lymphocytes.[1-2] Finally, in a study conducted in Japan, blood of 41 seropositive but healthy individuals, when transfused as cellular components, induced seroconversion in 63% of normal, unaffected recipients. Seroconversion did not occur in any of the 14 recipients of fresh frozen plasma derived from seropositive donors. Although to date, none of these individuals has developed clinical disease, the Japanese Red Cross Blood Centers are preparing to screen donated blood for HTLV-I antibodies.[4]

While the HTLV-I story was evolving, primarily in Japan, a new disease appeared in the U.S. characterized by severe, unexplained immune deficiency, multiple opportunistic infections, and/or malignancies. The immune deficiency is characterized by a reversal of the normal T-helper to T-suppressor cell ratio, and particularly by an absolute reduction in the number of T-helper cells. A variety of other ancillary findings including polyclonal hypergammaglobulinemia, elevated levels of alpha interferon, alphaα_1 thymosin, and beta microglobulin, and reduced levels of T-cell growth factor or interleukin-2 were noted. The opportunistic infection noted with the greatest frequency is Pneumocystis carinii, followed in one large New York series by Cytomegalovirus, Mycobacteria avium-intracellulare, Cryptococcus, Toxoplasmosis, M. tuberculosis, Herpes simplex and Legionella.[5] Histoplasmosis capsulatum is being recognized with increasing frequency in cases diagnosed in the Midwest.[6] Often, multiple opportunistic infections are present in a given patient. The most frequent malignancy observed is an aggressive, invasive varient of Kaposi's sarcoma similar to that described in African children and occasionally seen in immunosuppressed organ transplant patients.[5] An increased incidence of non-Hodgkin's malignant lymphomas, which are predominently B-cell type, has also been observed, raising interesting questions about the association of this disorder with EBV.[7]

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The disease, termed the Acquired Immune Deficiency Syndrome (AIDS) in 1981, is noted at this time in the U.S. to be most prevalent in gay males with multiple sexual partners (72%), followed by IV drug users (18%), Haitians (4%), hemophiliacs (1%), transfusion recipients (1%), and heterosexual sex partners of affected patients (1%). It was hypothesized that this same, or a closely related HTLV virus, reminiscent of some feline leukemia viruses which may cause either leukemia or T-cell specific immune suppression, was the causal agent of AIDS. Indeed, a specific AIDS viral agent has been independently isolated by Montagnier's group in France (termed Lymphadenopathy-Associated Virus or LAV)[2] and shortly thereafter by Gallo's group in the U.S. (termed HTLV-III).[3] Although distinct, HTLV-I and HTLV-III share partial genetic homology. Fundamentally, both are RNA-containing retroviruses, utilizing the enzyme reverse transcriptase for viral replication and exhibiting an exquisite tropism for helper T-lymphocytes. While HTLV-I is primarily oncogenic, producing malignant transformation in the infected helper T-lymphocytes, HTLV-III is primarily cytopathic, producing cell death and depletion of the infected helper Tlymphocytes.[8]

Epidemiologic investigations of HTLV-III suggest an origin in Central Africa. Recently, an increasing number of African cases have been described without any of the known associated risk factors and with an increasing incidence in women. Seroepidemiologic studies reveal a pattern closely analogous to the hepatitis B virus with high levels of seropositivity present in gay males with multiple sexual partners, populations indigenous to Central Africa, and to a lesser extent in drug addicts, hemophiliacs, and family members of an affected patient.

The HTLV-III virus, as with the HTLV-I virus, produces a clinical disease spectrum. It is now known that HTLV-III seropositive individuals may comprise asymptomatic carriers, or may manifest transient immunologic defects, chronic lymphadenopathy, malignant B-cell lymphoma, or the full blown acquired immune deficiency syndrome. However, the lymphocytes, from even healthy-appearing HTLV-III seropositive individuals harbor the viral agent within their helper T-lymphocytes and are therefore potentially infectious.[9] In addition, the HTLV-III virus has been isolated from the lymphocytes present in semen[9] and cell-free saliva[10] of healthy seropositive homosexual carriers.

The occurrence of malignant B-cell lymphomas is being recognized with increasing frequency in patients with AIDS or at high risk for AIDS. It is hypothesized that neoplasms may be related to activation of EBV-infected B-lymphocytes known to occur in this group of patients. It is known that EBV is a B-cell trophic. Infection with EBV confers on B-lymphocytes that capability of unlimited proliferation or immortalization. In the normal host, B-cell proliferation is held in check by T-cell regulatory mechanisms. Indeed, the atypical lymphocytosis characteristic of infectious mononucleosis represents mainly a T-cell response to the EBV infected B-lymphocytes. In AIDS, with disruption of normal T-cell regulatory mechanisms, there is reactivation of the EBV and proliferation of EBV-infected B-lymphocytes. The latter is usually polyclonal, may be limited or invasive, and more rarely becomes monoclonal. A similar pattern has been described in organ transplant recipients. It is likely that much of the lymphadenopathy seen in patients infected with HTLV-III represents a response to EBV reactivation. It is of further interest to note that while infectivity with HTLV-III is highly specific for helper T-lymphocytes, B-cells previously infected with EBV will support infection with HTLV-III. It has been suggested that if patients infected with HTLV-III, and particularly AIDS patients, live long enough, the occurrence of EBV-associated lymphomas will become increasingly probable.[11]

Post-transfusion AIDS is now well documented, is gradually increasing and frequently occurs in children.[12] It has been reported both with cellular components and cell-free preparations, such as factor VIII concentrate and plasma. The disease can be transmitted to chimpanzees, and this may serve as a useful animal model.[13] As of June, 1984, there have been 52 adults and 12 children with documented transfusion-associated AIDS (non-hemophiliacs). In addition, as of October, 1984, there have been 52 cases of AIDS in hemophiliacs. Furthermore, in a study of 200 hemophiliac A patients without AIDS, 74% were seropositive for antibody to the HTLV-III virus. The National Hemophilia Foundation currently recommends that hemophiliacs receive cryoprecipitate if possible (especially children and those patients never previously receiving factor VIII concentrates), and that if factor VIII concentrate must be used, consideration be given to use of heat-treated products (heat treatment appears to inactivate HTLV-III), and that where possible, in mild to moderate cases, an attempt be made to use desmopressin (DDAVP), an analogue of the naturally occurring antidiuretic hormone, vasopressin, that has been shown to raise factor VIII levels in normal subjects and patients with mild to moderate hemophilia A and von Willebrand's disease.[14]

It is likely, as with HTLV-I screening by the Japanese Red Cross, that HTLV-III screening of donated blood will soon begin in the United States. Such screening, while undoubtedly enhancing the safety of donor blood, will not absolutely assure absence of the AIDS agent, will possibly decrease the donor base through generation of false positive test results, will stigmatize seropositive donors and will add to the cost of blood and blood products. While increasing research should be directed at a more specific antigen test for AIDS and in defining more completely the carrier state, we should encourage, whenever possible, the use of autologous blood transfusion therapy, the ultimate in blood transfusion safety.

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Cover Photograph

"Autumn in Minnesota"

Dr. Henry P. Staub, a pediatrician with the Columbia Park Medical Group in Brooklyn Park, took the cover picture at a rest camp in the Iron Range. He and his family were on vacation.

He was in private practice in Northeast Minneapolis through 1966, and then became associated for the next seventeen years with medical schools of the University of Minnesota, the State University of New York-Buffalo, and for four years with the Medical School of Marshall University in Huntington, West Virginia. He moved back to Minnesota in 1983 and has been practicing here ever since.

The June, 1966 issue of MINNESOTA MEDICINE has as its cover another of Dr. Staub's photographs, "Spring in the Rockies."

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Ammoniated Mercury Membranous Nephropathy

ROBERT J. JEDDELOH, M.D.;* KATHLEEN D. LAKE, PHARM D.;† and DAVID C. BROWN, M.D., F.A.C.P.**

Proteinuria in a woman treated for psoriasis with ammoniated mercury lead to the discovery of membranous glomerulonephritis. This report reviews the literature and experimental models of mercury nephropathy.

The heavy metals cadmium, bismuth, gold, lead, and mercury produce a toxic nephropathy[1-3]. Intravenous mercury produces selective necrosis of proximal tubules in animals,[4] and small subcutaneous doses of mercury have resulted in immune complex disease [5,6]. The clinical use of mercury as a therapeutic agent is felt to be insignificant,[1] but we recently studied the renal lesion of a woman treated with ammoniated mercury for psoriasis.

Case Report

A 73-year-old housewife with psoriasis diagnosed in October, 1981 and treated with topical 5% ammoniated mercury presented to Abbott-Northwestern Hospital with back strain. Psoriatic lesions were noted on the left elbow, over the scalp, lower extremities, and under both breasts. There was no history of hypertension, edema, diabetes, renal disease, or familial renal disease.

Urinalysis showed 4-plus protein, 5-10 red cells, 2-5 white cells, and 0-2 red cell casts per high power field. The BUN was 26 mg/dl; the serum albumin 3.0 gm/dl; creatinine clearance 61 ml/min; and 24-hour urine protein excretion 4.4 grams.

The FANA was positive at 1:64 in a diffuse pattern. The anti-n-DNA was negative. Serum complement studies were normal; the urine ELP showed albuminuria; and the serum ELP showed hypoalbuminemia. The urine mercury level was 166 mcg/L (normal range of 0-20 mcg/1).

Results

Light microscopy of a percutaneous renal biopsy specimen showed eight glomeruli with mesangial hypercellularity on H&E stain. Trichrome stain showed numerous small subepithelial deposits along the capillary loops. The Jones Silver stain showed scattered subepithelial deposits suggesting early membranous glomerulonephropathy (MGN).

Immunofluorescence showed granular capillary IgG distributed uniformly in all capillary loops. Antihuman B1C showed traces of fluorescence and Anti-IgM showed finely granular material involving all capillary loops. Antihuman fibrinogen and IgA were negative. These findings were reported characteristic of an immune complex glomerulopathy (Figure 1).

Electronmicroscopy showed numerous focal subepithelial electron dense deposits over the majority of capillary loops. There was effacement of foot processes and villous transformation of epithelial cells. There were no deposits in the basement membrane, in the subendothelial or mes-

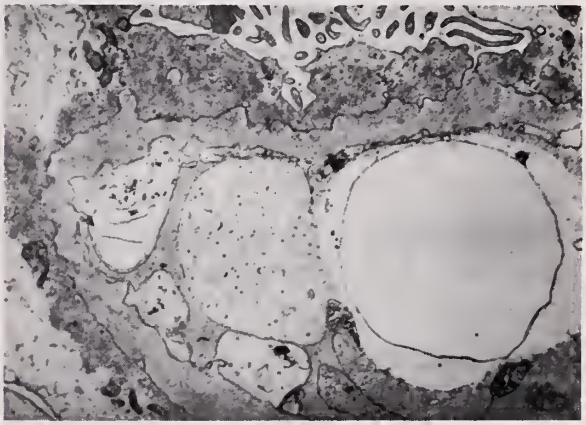

Fig. 1 - Immunofluorescence of anti IgG in all capillary loops.

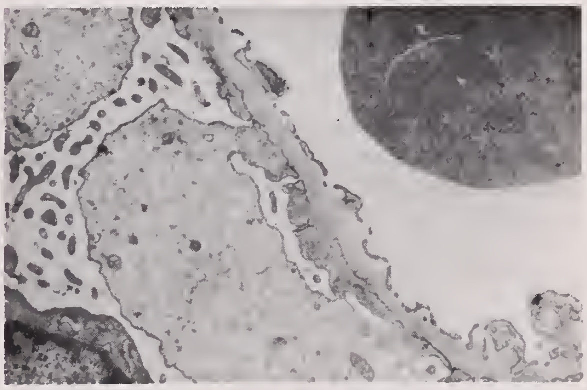

Fig. 2 - Focal subepithelial electron dense deposits over capillary loops.

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angial areas. The tubular epithelium was well preserved (Figure 2).

Discussion

Inorganic mercuric salts found in ammoniated mercury ointment are water insoluble, absorbed through the skin, and concentrated in the kidney. The main routes of excretion are urine and feces, and the elimination half-life is approximately 60 days.[1]

Mercury exposure can be evaluated in serum, urine, and hair concentrations. The serum level is less reliable than the urine because of rapid loss of mercury from the blood after absorption.[8]

Renal toxicity from mercury has been described in patients using topical mercury as a cosmetic agent and in instances of industrial exposure.[9-11] The renal lesion observed is identical to that described by Tubbs, et al., in their evaluation of two persons who developed proteinuria and MGN after industrial exposure to mercury.[11] Reports prior to Tubbs describe only light microscopy findings and no glomerular histopathologic abnormalities.[9] The lesion is also identical to that induced in mice by subcutaneous injection (0.2 mg per ml) of HgC12 by Makker, et al.[5]

The disease mechanism accounting for the immunopathologic findings remains obscure. Mercury may induce antibodies to basement membrane and extracellular collagen matrix resulting in MGN through an immune complex mechanism as proposed by Roman-Franco, et al.[12]

Filamentous electron dense inclusions have been identified in phagolysosomes of renal tubular epithelium of patients with gold nephropathy, and elemental analysis has shown these contain gold.[13] Tubbs, et al., were unable to identify mercury in the electron dense deposits noted in their biopsy material.

One year after discontinuing ammoniated mercury our patient showed no proteinuria and normal renal function. The nephropathy and electron dense deposits found in our patient were associated with significant urine mercury levels, and though the effects of mercury toxicity are rarely seen, our report characterizes a lesion due to a therapeutic agent.

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Renal Capsular Leiomyoma - Ansari et al. (page 578)

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Rheumatology Corner

Drug Therapy for Rheumatoid Arthritis

DANIEL E. HATHAWAY, M.D.*

The foundation for all therapy of rheumatoid arthritis is patient education. This includes information about the natural history of the disease and the role of rest and physical therapy. Of critical importance is an understanding of the risks and side effects of the medications and realistic expectations of possible benefits. Patients and many physicians lump all anti-rheumatic drugs together. As an example, a patient with severe, active rheumatoid arthritis who was recently started on gold shots might call requesting a prescription for Feldene. She explains that her friend noted rapid improvement in symptoms once started on that drug. It is important that both patients and physicians realize that these drugs are not comparable. As primary therapy they would be utilized by patients at different stages in their disease, and they have very different potential risks and benefits.

When thinking about the anti-inflammatory drugs used for rheumatoid arthritis, it is useful to divide them into two groups. The anti-inflammatory effects of the first group including aspirin, the nonsteroidal anti-inflammatory drugs (NSAID), and corticosteroids, are rapidly manifested (days to weeks). This compares with the delayed onset of action (weeks to months) seen with the second group which includes gold (both oral and I.M.), penicillamine, hydroxychloroquine, and the cytotoxic, immunusuppressive drugs such as azathioprine and methotrexate.

Aspirin and the NSAID in full anti-inflammatory doses are appropriate for almost all patients with rheumatoid arthritis. Despite recent concerns, this group of drugs is remarkably safe. True aspirin hypersensitivity (asthma and nasal polyps) and active gastrointestinal bleeding or obstruction are the only absolute contra-indications. One can almost always successfully deal with gastrointestinal intolerance. Renal function and fluid retention must be monitored in older patients with concomitant medical problems. Although varying anti-inflammatory mechanisms have been documented for aspirin and the NSAID, the shared mechanism is inhibition of the enzyme prostaglandin synthetase. Corticosteroids also decrease prostaglandin production but by a different mechanism. All of these drugs can produce significant improvement in the patient's pain, swelling, and morning stiffness. However, it has been impossible to demonstrate that these rapidly beneficial drugs alter the natural history of rheumatoid arthritis. Specifically, they do not prevent or retard the development of bony erosions.

Aspirin and the NSAID are the drugs of choice for newly diagnosed disease. Approximately 35% of patients with mild rheumatoid arthritis will never require stronger medication. These drugs will remain their primary pharmacologic therapy. Unfortunately for a majority of patients with rheumatoid arthritis, these drugs alone will not adequately control their inflammatory symptoms or joint erosions are seen on Xray. These patients become candidates for the drugs in the second group. Various names have been used for this group including remittive agents, slow acting anti-inflammatory drugs (SAAID), and disease modifying anti-rheumatic drugs (DMARD). The term remittive agent is used less frequently since true remissions are unusual. The other names identify characteristic features of the group including their slow onset of action and the fact that they have proven potential to modify the natural history of rheumatoid arthritis and retard the development of erosive disease. The trade-off for this greater potential benefit is increased toxicity. This ranges from blindness with hydroxychloroquine to aplastic anemia from gold, penicillamine, or the cytotoxic agents. Despite the shared delayed onset of action, no common anti-inflammatory mechanism has been found.

Like the NSAID, it is unpredictable what patient will respond to which slow acting agent. Therefore, it is necessary to try these drugs sequentially until one sees benefit. There is no uniformly accepted sequence. The choice will depend on a combination of the physician's familiarity with the agents and the patient's preference as to route of administration (I.M. vs p.o.) and willingness to risk specific toxicities. Gold, penicillamine, and hydroxychloroquine are all reasonable initial slow acting drugs. Hydroxychloroquine is the least toxic but also has a lower chance of being beneficial. Approximately eight of 10 patients receiving I.M. gold or penicillamine will benefit. However, up to 50% of these patients develop unacceptable toxicity. The percentage is higher for penicillamine than for intramuscular gold. Auranofin, the oral gold preparation, which has recently been approved by the Food and Drug Administration, appears to be less toxic. It may well become the drug of choice for initial therapy with a slow acting drug. Further articles in this column will go into greater detail about specific slow acting agents.

---

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Like aspirin and the NSAID, corticosteroids are rapidly acting drugs and to date have not been documented to alter the natural history of rheumatoid arthritis. However, they occupy a different position in the management of the patients. Intraarticular steroids may be beneficial throughout the course of rheumatoid arthritis for refractory disease in one or a few joints. Because of well known long term toxicity, oral prednisone is inappropriate for the patient with mild disease which can be managed with aspirin or a NSAID. Corticosteroids should not be thought of as a substitute for the slow acting, disease modifying agents. However, low dose prednisone (less than 7.5 mg/day) may be useful to help control symptoms in a patient being started on a slow acting drug. Once beneficial effect is achieved, the steroid can be tapered and discontinued.

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CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg below 90 mmHg). Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

Isosorbide dinitrate acts directly on vascular smooth muscle, therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet.

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus

Nursing Mothers: It is not known whether this drug is excreted in human milk Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours. Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg), Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg), Sustained Action Tablets (40 mg)

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Metastatic Cancer of Unknown Primary

THOMAS O. SWALLEN, M.D.*

This paper addresses the question of how best to work up the patient with metastatic cancer of unknown primary. The value of finding the primary, likely primary sites, commonly done tests, high yield and low yield tests, and likelihood of finding the primary are discussed. An evaluation strategy is proposed.

Metastatic cancer with an unknown primary is a common problem. In reviewing 7,000 cancer cases from the UCLA Tumor Registry, McMillan et al.[9] found 3.6 percent were metastatic cancers of unknown primary origin. The University of Kansas Tumor Registry reported an average incidence of 3.1 percent during the years 1950 through 1967.[5] Other reports give incidences ranging from 0.5 percent to 15 percent of solid malignant tumors.[3,4]

The problem facing the clinician is how aggressively to try to find the primary site. The array of diagnostic procedures available is enormous, and extensive workups are common.[3,12,13] Even the most extensive workups are often unrevealing, however, and are usually of no benefit to the patient.[13] How, then, is the clinician to proceed? Identification of certain primary tumors such as breast, prostate, or germ cell tumors may make specific and highly effective therapy possible. On the other hand, most patients with metastatic cancer of unknown origin have far advanced disease with only a few months to live and with tumors not significantly responsive to therapy. We do such patients no service by spending their time, energy, and money in searches whose goals are strictly academic. The purpose of this paper is to review this problem and to propose a strategy for evaluation of the patient with metastatic cancer of unknown primary based upon currently available information and technologies. Data from a small series of patients seen at North Memorial Medical Center is included.

Definition

Metastatic cancer of unknown primary is defined as adenocarcinoma or undifferentiated carcinoma metastatic to lung, liver, bone, brain, skin, lymph nodes, subcutaneous tissues, or with malignant effusions or intra-abdominal masses, and with no primary source apparent after clinical examination (history and physical), chest Xray, and routine laboratory tests (CBC, urinalysis).[8-10,13]

Deliberately excluded from this definition are squamous cell carcinomas metastatic to upper or mid cervical lymph nodes. In such cases, a primary is usually eventually found in the head or neck. Treatment of these squamous cell carcinomas is reasonably straightforward[3], and their prognosis is much better than adenocarcinoma or undifferentiated carcinoma of unknown origin.[3,9]

North Memorial Medical Center Cases

During the years 1979 through 1983, 51 cases of metastatic cancer with unknown primary were recorded by the North Memorial Medical Center Tumor Registry. The Registry applied this designation to tumors whose primary site was not evident at completion of the initial workup, however extensive that workup might be. Ten of these 51 cases were excluded, four because they were squamous cell cancers in neck nodes, four in which there was no tissue obtained, and two others in which the coding appeared in error (one patient with an endometrioid cancer in the vagina, another with multiple pulmonary carcinoid tumors). Of the remaining 41 cases, 22 were males, 19 females.

The age range was from 51 to 96 years, with a median range of 75 years. Survival was poor, with 17 (41%) of the patients dead at one month and 26 (63%) dead at three months (Figure 1).

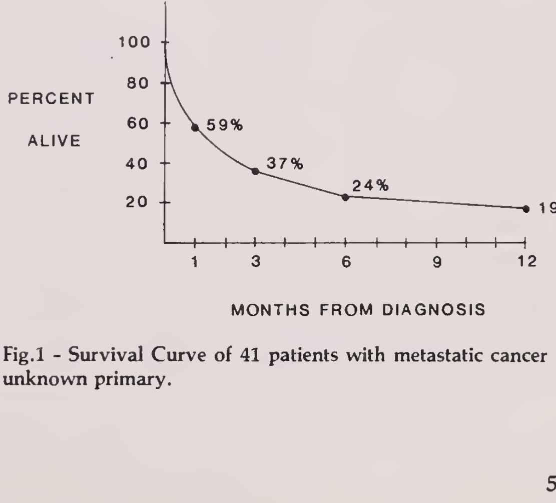

Fig.1 - Survival Curve of 41 patients with metastatic cancer of unknown primary.

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The diagnosis was made on biopsies from a wide variety of sites, the most common being liver (12), bone (7), lymph nodes (6) pleural fluid (5) and subcutaneous tissues (4).

The initial workups were managed by many different physicians, and varied from brief and limited workups (some limited by the patient's rapid demise), to others which were quite extensive. The patients were managed by primary care physicians in 31 cases, by oncologists in ten cases. The numbers of cases in which certain common radiologic procedures were done in efforts to find the primary are shown in Figure 2.

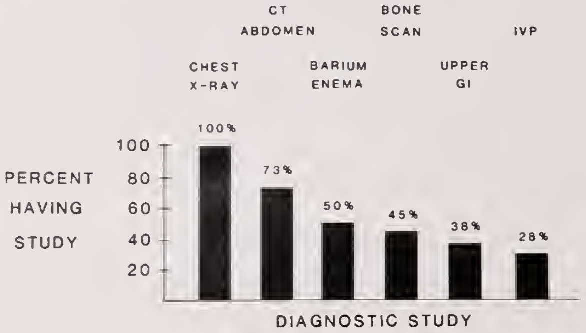

Fig. 2 - Percent of patients having certain diagnostic studies 41 patients with metastatic cancer of unknown primary.

Importance of Finding the Primary

Certain tumors are highly amenable to current therapy, and identifying them as the primary may make effective or even curative treatment possible. Systemic therapy which is potentially curative is possible with germ cell tumors, trophoblastic tumors in females, Hodgkin's disease and non-Hodgkin's lymphomas. Non-toxic hormonal treatment may be highly effective in breast, prostate, or endometrial cancer. Chemotherapy is effective in improving the course of breast, ovary, and anaplastic small cell (oat cell) cancers.

Beyond these specific examples, the value of identifying the primary becomes less clear. Establishing the site in most patients will not alter their course, since most possibilities (e.g. lung, pancreas, liver, colon) are only minimally responsive to chemotherapy.[9] Survival in these patients is short and is usually little altered by either single or multiple agent therapy.[1,11] Steckel et al.[13] in a retrospective analysis of cases in whom the primary was found at autopsy felt that knowledge of the primary site prior to death would not have influenced treatment or prognosis.

The clinician must, therefore, balance costs and benefits, trying to identify those patients likely to be helped by treatment while sparing others a difficult, costly and futile investigation.

Most Likely Primary Sites

In a study of 266 patients with metastatic disease and unknown primary, Nystrom et al.[9] found pancreas, lung, colon, liver and stomach to be the leading primaries (as eventually discovered over time or at autopsy). Gaber et al.[3] had 40 patients in whom the primary was eventually found. Lung, pancreas, ovary, prostate, breast and lymphoid tissue, in that order of frequency, were the sites of origin. McMillan[9] found pancreas to be the most common site in his series. In diagnoses established at autopsy, Steckel[12] found lung to be the most common primary, followed by pancreas. Didolkar[1] found lung (40%) and pancreas to be the most common sites of origin. From these several reports, lung and pancreas emerge as the most likely origins of metastatic cancer of unknown primary. The list of possibilities is long, however, and includes colon, liver, stomach, ovary, kidney, urinary bladder, biliary ducts, prostate, adrenal, germ cell tumors, thyroid, and lymphomas.

What Tests Are Commonly Done?

The belief that finding the primary site might lead to specific tumor treatment or at least give a better guide to prognosis, coupled with the diagnostic challenge posed by such patients, has often led to extended workups using an array of radiologic, radioisotope, and laboratory procedures. X-ray procedures have included chest films and lung tomograms, skeletal films, IVP, barium enema, upper GI, mammograms, sinus films, cholangiograms and angiograms as well as CT scans of head, chest, abdomen and pelvis. Radioisotope scans of liver, pancreas, thyroid, kidney, bone, brain, and lung have been utilized. Laboratory tests include "routines" such as CBC and urinalysis and chemistry screens (SMA-12) or liver batteries, as well as more specific tests such as prostatic acid phosphatase, alpha fetoprotein and human beta chorionic gonadotrophin.

Holmes, in reviewing charts of 686 patients, found "the scope, expense, and hazard of the searches for primary tumors (was) impressive, often staggering."[5] Shildt[11] refers to "the overwhelming temptation for the physician (is) to order a multitude of tests to locate the primary site."

The attitude that the primary must be sought with an extensive workup is expressed by

Didolkar[1] who states that "an extensive radiologic and radioisotope workup is necessary," and recommends "a thorough search not only to detect the primary tumor, but also to know the extent of the disease." He makes these recommendations in spite of the fact that in his series of 254 patients, the primary was found in only 30 percent, and those mostly at autopsy. Also, only six percent of the patients responded to chemotherapy, and median survival for patients with undifferentiated carcinoma was six months, with adenocarcinoma seven months. One might well ask what was accomplished for these patients by the extensive workups.

Steckel et al.[13] reported on two patients with extensive workups in attempts to locate the primary tumor. One of these had 24 different diagnostic procedures. The primary was not found and was still unclear at autopsy.

Although barium enema, upper GI radiographs, and IVP have been shown to be low yield tests without predictive value in asymptomatic patients,[3,10] they are commonly used. Combined data from four reports[1,9-11] with a total of 633 patients with metastatic cancer and unknown primary show barium enema was done in 456 (72%), upper GI in 506 (80%), and IVP in 435 (69%). In the series of 41 patients from North Memorial, 50 percent had barium enema, 38 percent upper GI, 28 percent IVP. Seventy-four percent of the North Memorial patients had CT scans of the abdomen.

What Tests Give the Best Yield?

In deciding what tests to do, many factors warrant consideration. These include the cost of the procedure, the inconvenience or discomfort to the patient, the likelihood of a positive result, the incidence of false positive or false negative results, and finally, whether the result is worth the effort, i.e., will it make a real difference to the patient.

In the great majority of patients presenting with metastatic carcinoma, the primary will be evident after thorough history and physical examination, chest Xray, CBC and urinalysis.[12] These procedures are always appropriate in workup of the patient with metastatic disease of unknown origin. An SMA-12 or battery of liver tests will often give useful information about the extent of disease. Certain tests seem worth doing even if their percent yield is low, because they are easy, inexpensive, and may make a significant difference to the patient if positive. Stool guaiac may direct attention to an occult GI malignancy. Acid phosphatase in males is an indicator of prostatic cancer. Alpha fetoprotein is a marker for hepatoma or germ cell tumors.

Gaber et al.[3] in their study of 106 patients found chest Xray with full lung tomograms and bone scans to be the only high-yield roentgenographic tests, and the only tests they recommended be obtained on a routine basis in all patients with metastatic disease of unknown primary. In their referral material, routine chest films were positive in 43.3 percent of patients, and lung or mediastinal tomograms provided additional useful information in 63.3 percent. Bone scans were positive for metastatic disease in almost 50 percent of patients without symptoms of bone involvement and were felt to have independent utility in detecting the extent of tumor involvement. Other tests were not of use in asymptomatic patients and are indicated only in the presence of organ-specific symptoms. Procedures directed at specific symptoms (e.g., barium enema or upper GI on a patient with melena, IVP with hematuria) did have good yield.

McMillan's group[9] performed bone scans in 26 patients (of their 75 total), and 17 showed findings consistent with metastases. McMillan's article focused on the use of computed tomography (CT scans) in evaluating unknown primary tumors. In 46 abdominal CT scans in their series, 13 showed the primary site. Two of 13 pelvic CT scans and one of seven chest CT scans also found primary tumors. They concluded that the use of CT scans during the initial patient evaluation markedly increased the percent of patients in whom the primary was located during the initial evaluation.

Kamin[6] compared ultrasound and computed tomography (CT) in detecting pancreatic malignancy. CT was superior because of the frequency of unsatisfactory studies with ultrasound. He concluded that CT should be an initial diagnostic procedure for assessing known or suspected pancreatic cancer. Karsell et al.[7] reviewed the use of CT in 98 patients in the search for a primary and concluded that the addition of CT scanning in selected patients is "both reasonable and efficacious." Gaber[3], on the other hand, while concluding that CT scans of the abdomen "seem accurate and dependable," because of "cost and availability," felt they should be reserved for patients being considered for exploration or systemic treatment.

Osteen[11] found that of several radiologic and radionuclide tests, bone scan was the most productive study. Lesions were found in nine of seventeen patients with no symptoms referable to bone. The bone scan does not, of course, give information as to the primary site. He felt that history and physical, chest Xray, adequate tissue samples, and Xrays directed at specific symptoms constituted an adequate workup.

What Tests Give Poor Yield?

Other than chest Xray, bone scan, and CT of the abdomen, the yield of roentgenographic procedures in the absence of specific site-related symptoms or signs is poor.

Nystrom et al.[10] found barium enema, upper GI, and IVP to have no predictive value in patients without symptoms directing the clinician to these organ systems. In asymptomatic patients, there were significant problems with false positive and false negative results.

Gaber's[3] study confirmed the poor yield of IVP, barium enema, and upper GI roentgenograms in asymptomatic patients. In addition, they found gallium scans, mammograms, and thyroid scans "useless" in workup of these patients. Liver-spleen radionuclide scans added little to information obtained by physical exam and serum alkaline phosphatase measurement. They also noted that screening endoscopy (sigmoidoscopy, colonoscopy, bronchoscopy) was of no value.

Stewart et al.[14] reaches similar conclusions, citing the extremely poor yield of most screening investigations. Of 35 IVPs, two were thought diagnostic of renal cancer but were false positives. One renal cancer was missed. With 24 upper GI studies, four were thought to show cancer and three of these were false positives. One gastric cancer, later found at autopsy, was missed.

It seems clear that barium enema, upper GI, and IVP are not indicated in the patient with metastatic cancer of unknown origin, unless there are symptoms or signs of disease in the GI tract or urinary tract. The other roentgenographic or radionuclide procedures are also not indicated unless organ-specific symptoms are present.

How Often Will the Primary Be Found?

Stewart et al.[14] found the primary in 11.5 percent of their patients during the initial evaluation, and ultimately in 34.5 percent. Nystrom[10] reported an 8.3 percent initial yield and 48.5 percent final yield. McMillan[9], using CT scans of the abdomen in initial evaluation, increased the initial discovery rate to 43.5 percent. His final rate was not much better, 45.7 percent. Didolkar et al.[1] established the primary site in 30.3 percent of their patients, usually at autopsy. Osteen et al.[11] found the primary in 57 percent of their group of patients using an extensive diagnostic evaluation. However, in an additional 10 of their 67 patients (15%), an incorrect clinical diagnosis was made.

The value of the autopsy in detecting the primary is evident in two studies. Nystrom's group[10] found the primary in 82 percent of patients autopsied (107 of 130), and Osteen et al.[11] found it in 20 of 22 autopsied patients (91%). In Steckel's[13] report, on the other hand, the primary was found in only 14 of 34 autopsied patients (41%).

It is evident that no matter what studies are done, a significant percent of these patients will die with the primary site undetermined. In some, it will remain obscure even after autopsy.

Evaluation Strategy: General Approach to the Problem

Although an extensive search for the primary is commonly done, several authors have made a plea for a more limited approach.[3,11-14] Gaber et al.[3] advocated a symptom-directed approach with only history and physical, CBC, urinalysis, liver function studies, chest Xray, bone scan and biopsy being "routine." Tissue is subjected to special stains, immunocytochemistry, and electron microscopy if indicated. Further workup is only directed at organ-specific symptoms.

Osteen[11] did a retrospective study of 67 patients with systemic metastases from unknown primaries who had had extensive diagnostic workups. He concluded that a "minimum" workup of history and physical, chest Xray, stool guaiac, Xrays of symptomatic lesions, and adequate tissue biopsies would have saved much patient time and comfort and would not have sacrificed any patients who could have been helped.

Shildt et al.[12] advocated a limited approach consisting of history and physical exam, stool guaiac, urinalysis, chest Xray and acid phosphatase in males. Further radiologic or endoscopic studies are done only to evaluate symptomatic areas. If the initial evaluation is negative, no further studies are recommended.

Steckel[13] stresses that an extensive diagnostic workup may be fruitless while subjecting the patient to "expense and duress." He called long and arduous series of examinations to locate the primary "a pointless academic exercise."

Stewart[14] concurs that extensive investigations are "hard to justify," and states that efforts should aim at excluding the possibility of treatable tumors by measuring acid phosphatase, alpha fetoprotein, beta HCG, and by imaging pelvic organs.

Certainly the workup of all patients must be individualized. The evidence is strong, however, that extensive "screening" searches for the primary tumor are not indicated. Certain high yield tests (chest Xray, bone scan, CT scan of the abdomen) may be uniformly indicated as well as serum tests to detect highly treatable tumors. Other radiologic or radionuclide tests are done only if indicated by organ specific symptoms. A good biopsy specimen is imperative, and the clinician should alert the pathologist prior to the biopsy to the fact that this is a metastasis of unknown primary. Samples suitable for electron microscopy and immunocytochemistry can then be saved.

We have developed an evaluation strategy that will be suitable for most patients (Figure 3). This is similar to the strategy proposed by Gaber et al.,[3] but adds CT scan of the abdomen and stool guaiac to the initial "core" workups. If the initial workup fails to reveal the primary, no further testing is done at that time. Treatment is instituted as is appropriate. The patient is seen in follow-up visits, and if organ-specific signs or symptoms develop, further diagnostic testing directed at those signs or symptoms is done.

Summary

1. Metastatic cancer of unknown primary is a common problem, constituting about three to four percent of solid malignant tumors.
2. Identifying certain highly treatable cancers such as breast, prostate, or germ cell tumors through serum or tissue markers may make effective therapy possible.
3. The most likely primary sites are lung and pancreas; but the list of possibilities is long.

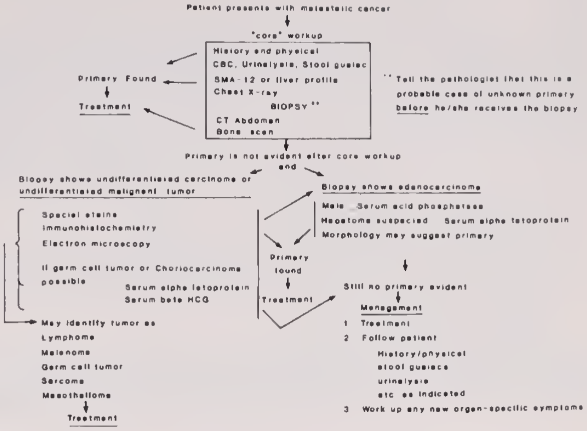
Patient presents with metastatic cancer
"core" workup
History and physical
CBC, Urinalysis, Stool guaiac
SMA-12 or liver profile
Chest X-ray
BIOPSY **
CT Abdomen
Bone scan
Primary Found
Treatment
** Tell the pathologist that this is a probable case of unknown primary before he/she receives the biopsy
Primary is not evident after core workup and
Biopsy shows undifferentiated carcinoma or undifferentiated malignant tumor
Special stains
Immunohistochemistry
Electron microscopy
If germ cell tumor or Choriocarcinoma possible
Serum alpha fetoprotein
Serum beta HCG
May identify tumor as
Lymphoma
Melanoma
Germ cell tumor
Sarcoma
Mesothelioma
Treatment
Biopsy shows adenocarcinoma
Male Serum acid phosphatase
Hepatoma suspected Serum alpha fetoprotein
Morphology may suggest primary
Primary found
Treatment
Still no primary evident
Management
1 Treatment
2 Follow patient
History/physical
stool guaiac
urinalysis
etc as indicated
3 Work up any new organ-specific symptoms

Fig. 3 - Evaluation strategy for patients with metastatic cancer of unknown primary.

4. Although extensive workups are often done, they usually do not find the primary and are rarely of benefit to the patient. For most tumors, establishing the primary will not significantly alter the course.
5. Chest Xray, bone scan, and CT abdomen scan are high-yield radiographic tests, usually indicated as part of the initial workup of a patient with metastatic cancer of unknown primary.
6. Barium enema, upper GI, and IVP are low-yield tests without predictive value in patients without organ-specific symptoms or signs.
7. In many cases, probably the majority of cases, the primary may never be found.
8. As much information as possible should be obtained from the biopsy by doing special stains, immunohistochemistry, or electron microscopy, as indicated.
9. A strategy for the evaluation of the patient with metastatic cancer of unknown primary is presented.

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Commentary on the Minnesota Medical Association's Do-Not-Resuscitate Guidelines

STEVEN H. MILES, M.D.* and
D. GAY MOLDOW, B.S.N., A.C.S.W.*

In 1981 the Board of the Minnesota Medical Association (MMA) endorsed model guidelines for Do-Not-Resuscitate (DNR) orders. Two years later, nearly half of the hospitals in Minnesota had adopted DNR protocols, two-thirds of which were derived entirely (17%) or in large measure (50%) from the MMA model.[1] In addition, the state medical associations in New York and Alabama adopted guidelines based on the MMA statement.[2]

The success of the MMA guidelines may be attributed to several factors. Clearly, the endorsement of DNR guidelines by the prestigious professional group answered a need for leadership in a new, urgent, and unfamiliar policy area. Second, the document was brief and to the point consisting of a one page definition of the DNR order, a statement of key decision-making principles, and a short list of critical procedures to be followed in implementing DNR decisions.

This paper will introduce the MMA guidelines, underlined in the following discussion, to those unfamiliar with its provisions. For those considering adopting or revising the MMA guidelines, we will discuss incremental modifications that were made in adapting it to individual hospital needs. The individual policies cited were obtained for an earlier study which gives a statistical analysis of their content.[1]

Do-Not-Resuscitate (DNR) Guidelines

Commentary. Policies dictate what guidelines suggest. Since many hospitals have a policy that resuscitation is to be attempted for any patient in the absence of a directive to the contrary, DNR orders, as exceptions to policy, should be authorized by policies rather than by advisory guidelines. Minnesota hospitals have adopted DNR "policies" in preference to "guidelines." Some policies combine the standing order for resuscitation with provisions for DNR orders, "Every person admitted to ____ shall be resuscitated in the event of a cardiac or respiratory arrest unless the attending physician writes a specific order stating Do-Not-Resuscitate . . . ."

Definition

DNR (Do-Not-Resuscitate) - In the event of an acute cardiac or respiratory arrest, no cardiopulmonary resuscitative measures will be initiated.

Commentary. This definition of the intent of the DNR order is widely used by hospitals[1], nursing homes[3] and by Minneapolis' Emergency Medical System. The only Minnesota Court decision to specifically address DNR orders also accepted this definition noting, however, that a decision to decline "long term mechanical life support" should not be interpreted as authorizing a DNR order which refers only to "brief, emergency cardiopulmonary resuscitation."[4,5]

Considerations

1. An appropriate knowledge of the patient's medical condition is necessary before consideration of the DNR order.

Commentary. Several policies emphasized that DNR orders should not represent a hasty emergency assessment but, should be based on an extended familiarity with the patient's condition, "An adequate period of observation and appropriate diagnostic evaluation is necessary before consideration of DNR."[6]

2. The attending physician should determine the appropriateness of the DNR order for any given medical condition.

Commentary. Though a few policies specifically suggest that DNR orders be considered in terminal illness or persistent vegetative state, DNR orders may be appropriate in any number of irreversible conditions. Policy language that suggests withholding of medical care on the basis of disease or disability has been extremely controversial. While "terminal illness," for example, is a common reason for DNR orders, the utility of "terminal illness" in DNR policies is limited by the uncertainty inherent in predictions of duration of life and the indistinct separation of terminal illness and chronic disease. In any case, a DNR order should not be formulated on the basis of "terminal illness" per se, but, because the benefits of treatment are outweighed by the burdens of the treatment as evaluated by patients or those who may speak on their behalf.[2]

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3. DNR orders are compatible with maximal therapeutic care. The patient may be receiving vigorous support in all other therapeutic modalities and yet justifiably be considered a proper subject for the DNR order.

Commentary. This provision is intended to emphasize that DNR applies only to the standing order for resuscitation and should not be used to designate very limited care plans (e.g. Supportive-Care, Routine-Terminal Care). A few hospitals, some retaining this provision in their guidelines, interpret DNR to mean that only "ordinary" palliative care is to be given. While patients receiving limited care in anticipation of death should have DNR orders, hospitals should retain a narrow definition of DNR for patients who decline resuscitation, while electing to continue life-extending medical treatments such as chemotherapy or dialysis. By itself, a DNR order does not imply any lessening in the care that is taken to prevent death; airway suctioning or antiarrhythmics may well be part of the care of patients with DNR orders.

We propose alternative wording to clarify this issue "DNR applies only to the emergency use of resuscitation. Patients with DNR orders should remain eligible for any life-extending medical therapies compatible with the documented objectives of their care."

4. When the patient is competent, the DNR decision will be reached consensually by the patient and physician. When the patient is judged to be incompetent, this decision will be reached consensually by the appropriate family member(s) and physician. If a competent patient disagrees, or in the case ofimcompetency, the family member(s) disagrees, a DNR order will not be written.

Commentary. There is consensus that competent patients' wishes are determinative for decisions about their medical care. A few Minnesota hospitals adopted an early draft of the MMA guidelines allowing physicians to decide when involvement of a competent patient would not be in the patient's "best interest." This provision is inadvisable in the present climate of open discussion of these issues and regard for patient autonomy. In the authors' experience, many patients, fearful of invasive treatment at the end of life, are open to discussion of resuscitation especially when reassured that limiting burdensome therapies will not mean that the physician's and nurse's attentive concern and palliative skills will be withdrawn at a time when they are most wanted.

The extensively discussed[2] problem of consent for incompetent patients has caused confusion, fear of liability and a variety of amendments to the MMA guidelines including: requiring consent from *all* family members, ordinal lists of familial authority for consent, and the suggestion that family disputes be referred to courts or ethics committees. As a whole, court opinions do not justify excessive concern for liability for a deliberative good faith effort by families and physicians to develop care plans for irreversibly ill patients. Court opinions in Minnesota[4,7] and elsewhere stress that family consultation should seek the wisdom of those with an intimate, loving knowledge of the patient to determine the course the patient would take if able to participate in the decision. This position, called "substituted judgment," is represented by one hospital's amendment to MMA wording that, "[the physician and family should consensually decide] based upon the course of action the patient would choose . . . ," an amendment that seems in the spirit of the court's concern.

Implementation

1. Once the DNR decision has been made, this directive shall be written as a formal order by the attending physician. It is the responsibility of the attending physician to insure that this order and its meaning are discussed with the appropriate members of the hospital staff.

Commentary. DNR orders must be signed by physicians in the patient's permanent medical record. Withholding resuscitation without a documented DNR order is inconsistent with the policy of standing orders to resuscitate and exposes hospitals and staff to legal liability. The nature of this liability was defined by a grand jury in New York that termed the implementing of DNR orders from the non-permanent nursing kardex, "a shocking procedural abuse," that "eliminated professional accountability," "discouraged" informed consent and "invited clerical error."[8] The New York State Medical Association's DNR guidelines, cited by the grand jury, are copied from the MMA guidelines. The written DNR order is endorsed by 95% of the hospital policies in Minnesota.[1]

2. The facts and considerations relevant to this decision shall be recorded by the attending physician in the progress notes.

Commentary. Many hospitals expanded on the MMA guidelines to explicitly require recording of discussions of DNR orders with the patient or family along with the names and relationships of those participating in this decision. Some hospitals required nurses to independently record this consent process. A few policies specified that the medical rationale for this decision and the nature and intent of the care to follow the DNR order should also be recorded.

3. The DNR order shall be subject to review on a regular basis and may be rescinded at any time.

Commentary. A few hospitals have formalized this provision by requiring that DNR orders be rewritten at regular intervals ranging from a day to a week.

Conclusion

The DNR guidelines of the Minnesota Medical Association are widely used as a policy model by Minnesota hospitals and appear to be conceptually, ethically and legally adequate. The fact that only 17% of the DNR policies in Minnesota are derived entirely from the MMA guidelines suggests that in formulating these policies, hospitals consider the MMA guidelines with other legal and ethical resources in the light of their individual concerns and needs. In addition to the amendments already discussed, some hospitals have adopted provisions authorizing nurses to refuse to accept improperly made DNR directives. Hopefully, DNR policies improve patient care by: (1) clarifying the meaning of the DNR order, (2) defining standards for decision making practices and patient involvement in these decisions, and (3) providing for recorded accountability for these decisions. In the final analysis, DNR policies are only effective to the extent that medical staff understand their provisions, and more importantly, accept the principles underlying them. In this sense, DNR policies are not so much a final word as a foundation for staff education.

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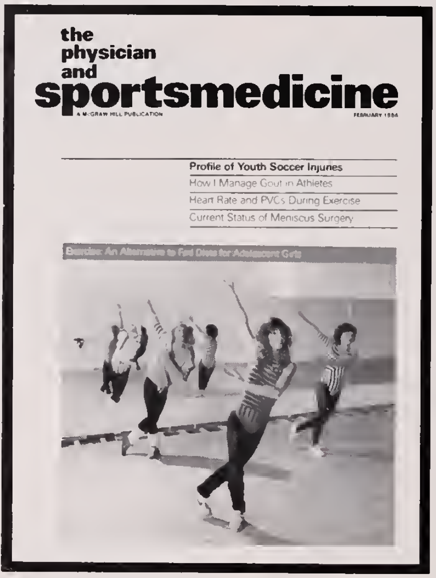

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Institutional Ethics Committee's

Roles, Responsibilities, and Benefits for Physicians

COMMITTEE ON ETHICS AND MEDICAL-LEGAL AFFAIRS

Ethical dilemmas are a part of modern medical care. The same medical technology that can restore life for some merely prolongs dying for others. Physicians and other health care providers, their patients and patients' families are confronted with ethical dilemmas such as foregoing life-sustaining treatment with increasing frequency.

Decision making in the face of ethical dilemmas, especially when incompetent patients are involved, is difficult. These and other bioethical dilemmas have led to the development in some health care facilities of Institutional Ethics Committes (IECs). An IEC is "a multi-disciplinary group of health professionals within a health care institution that has been specifically established to address the ethical dilemmas that occur within the institution."

Ethics committees are not primary decision makers. Rather, they serve in a consultative, informative, and advisory capacity, supporting the primary decision making role of the patient-family-physician triad. The three functions of IECs are education; policy and guideline development; and consultation.

The Minnesota Medical Association endorses the establishment of Institutional Ethics Committees and urges that physicians take a leadership role in their establishment and activities.

At the MMA House of Delegates meeting in May, 1985, the following resolutions were adopted:

Resolved, that the Minnesota Medical Association endorse the voluntary formation of multi-disciplinary Institutional Ethics Committee which function in an educational, policy making, and advisory capacity to address the ethical dilemmas which arise within a health care facility, and be it further

Resolved, that the Minnesota Medical Association encourages physicians to take a leadership role in the formation of Institutional Ethics Committees, and be it further

Resolved, that the Minnesota Medical Association serve as an educational resource to assist physicians in this leadership role.

Section I describes Institutional Ethics Committees and the history of their development.

Section II discusses the roles of Institutional Ethics Committees in medical decision making in relationship to the cases of Clarence Herbert (California) and Rudolpho Torres (Minnesota).

Section III discusses the functions of Institutional Ethics Committees, composition of the committees and concerns.

The final section suggests steps physicians can take to establish an Institutional Ethics Committee in their health care facility.

Introduction

What are Institutional Ethics Committees? What is their role in medical decision making? What benefits and problems can physicians expect to encounter from ethics committees? Should physicians promote the establishment of ethics committees in institutions in which they practice?

The purposes of this paper are:

- To describe institutional ethics committees (IECs), including their history;
- To discuss their role in medical decision making;
- To identify some specific and unresolved issues and practical considerations related to ethics committees;*
- To propose a policy on ethics committees for consideration by the Minnesota Medical Association.

[*Ethics committees have different names in different institutions. Many of the committees in the Twin Cities are called "biomedical ethics committees," although there are other names such as "ethical concerns committee," "ethics forum," "ethics committee," reflecting in part a committee's stage of development. Similar nomenclature differences exist in the generic terms of bioethics and biomedical ethics; most persons in the field agree that these are similar terms, referring to ethical issues in the life sciences, especially as they relate to health and medical care; they are used synonymously in this discussion.]

I. Description and History of Institutional Ethics Committees

An IEC is "a multi-disciplinary group of health professionals within a health care institution that has been specifically established to address the ethical dilemmas that occur within the institution."[1] Key words are *multi-disciplinary*, *within a health care institution*, and *ethical dilemmas*—a review of the history of ethics committees provides insight into the importance of these terms.

Ethics committees are a relatively recent development; their origin is attributed in part to the 1976 decision of the New Jersey Supreme Court in the Karen Quinlan case, although the role assigned to an IEC by that court was primarily to determine or validate prognosis. The benefits of review by an ethics committee, as cited by the New Jersey Supreme Court, were also limited: to reduce fear of civil or criminal liability.[2] Although the cited focus and benefits of IECs are somewhat limited, the source of the Court's citation, Karen Teel, M.D., stated the underlying premise of the proposed policy for consideration by the Minnesota Medical Association: ethics committees are advisory, rather than enforcement bodies. Ethics committees do not replace the patient-family-physician triad. Rather, they can provide a forum and a process to assist patients, families, and physicians when confronted with difficult ethical dilemmas.

The Quinlan decision did not result in a rush to establish ethics committees. A few hospitals established committees in the late 1970's, including Hennepin County Medical Center, in Minneapolis. These were begun not merely for the purpose of reducing liability, but because hospital staff recognized the need for a forum and a process that would do more than confirm prognosis; that would, as the American Medical Association stated in its support of infant bioethics committees:

> ". . . offer assistance to parents, physicians, and all other members of the treatment team in making critical treatment decisions. Such committees could provide a free and open forum for all parties to exchange views and information on a particular case and also provide a valuable educational role on options available for treatment and subsequent care."[3]

Minnesota leads most of the nation in a number of areas of biomedical ethics, including institutional ethics committees. For example:

1. The Minnesota Medical Association developed and adopted criteria for brain death in 1976. MMA was one of the first state medical associations to do so.
2. The Minnesota Medical Association was the first state medical association to adopt "Do Not Resuscitate" guidelines, in January, 1981. A 1983 survey of Minnesota hospitals showed that 86% of 148 responding hospitals accepted written DNR orders and 44% have adopted protocols for implementing them.[4]
3. Twin Cities hospitals not only were in the forefront in establishing ethics committees, but the region has a higher than average proportion of hospitals with IECs. As of September, 1984, 15 of the 34 acute care hospitals in the Twin Cities had established committees and at least 11 more were in the process of doing so; five hospitals in other regions are known to have ethics committees. Several nursing homes have ethics committees and a number of others have requested information about starting them.
4. Minnesota has the first organized network of ethics committees in the nation. The Minnesota Network for Institutional Ethics Committees was begun in 1982 in the Twin Cities, as a volunteer grassroots effort, and was provided an organizational home by the Minnesota Hospital Association in September, 1984. Outside funding is being sought to allow for full-time staffing as a statewide resource. The Network provides for regular sharing of information and education among IECs and assists institutions wishing to establish such committees.[5]
5. The Twin Cities Committee for Neonatal Life Support Policy is unique in that, in 1982, it brought together representatives from all the neonatal intensive care units (NICUs) in Minneapolis and St. Paul and persons knowledgeable in medical ethics to develop ethical propositions, policies for decision making, and guidelines for care of seriously ill newborns.[6]
6. The Hennepin County Emergency Medical Services Council developed "Directives to Limit Emergency Medical Treatment" in the fall of 1984. These are guidelines for long term care facilities to use to prevent cardiopulmonary resuscitation and endotracheal intubation of

> nursing home residents who do not wish to have these procedures done, and whose physicians have written DNR or DNI orders on their charts.[7]

Much of Minnesota's leadership in biomedical ethics can be attributed to its overall history of innovative health and medical care. In addition, Minnesota has a tradition of advocacy and of public participation in decision making. This combination of progressive medical leadership and shared decision making is a natural antecedent to institutional ethics committees.

II. The Role of Institutional Ethics Committees in Medical Decision Making

Ethics committees do not make medical decisions. The final responsibility for making a decision in an ethical dilemma remains with the patient or, in the case of an incompetent patient, the patient's family or other surrogate, and the physician. Ethics committees can advise on cases which present difficult ethical dilemmas—situations in which a choice must be made between equally unpleasant or undesirable alternatives. Most medical cases do not present ethical dilemmas. Conversely, ethics are involved in most, if not all, decisions that physicians make because their professional ethics are an integral part of medicine, as they are in nursing, in law, and in all other professions. Ethical dilemmas are compounded by conflicts in the values of the various professions involved in a case. Ethics committees provide a forum and a process for discussing various treatment alternatives, as well as the differences in values that the participants bring to a particular dilemma. The one ethical principle on which there is consensus among the various professions is autonomy: a competent person has the right to accept or reject treatment.

Case review and consultation is not the primary function of IECs—their education and policy/guideline functions contribute as much, if not more, to ethical decision making and the decision making process. In many cases, however, review by an ethics committee may provide an alternative to referral to the courts, or, if legal action results, may protect institutions and/or physicians. Voluntarily established IECs may also prevent government-mandated committees. The federal "Baby Doe" legislation and proposed rule and interim guidelines, flawed as they are, indicate that the federal government views voluntary ethics committees as an alternative to government hotlines and investigative teams.

Illustrative Cases

Two cases illustrate the role of ethics committees: one, the Clarence Herbert case in the Kaiser Permanente Hospital, Harbor City, California, is an example of a dilemma in which an ethics committee possibly could have prevented poor decision making and serious consequences for the physicians who made the decision. It also shows the legal confusion related to foregoing life-sustaining treatment. The other, that of Rudolpho Torres, in Hennepin County Medical Center, Minneapolis, Minnesota, illustrates the benefits to physicians and institutions from consultation with experienced ethics committees, and also sets a nation-wide legal precedent for the role of IECs.

1. *The Herbert Case*

Clarence Herbert was a 55 year old patient in the Kaiser Foundation Hospital at Harbor City, California. In August of 1981, he suffered cardiopulmonary arrest following surgery to close an ileostomy; a prognosis of irreversible brain damage was established. Two days later, with written consent from the family, the attending physician, Dr. Barber, ordered the ICU nurses to discontinue the respirator. They refused to do so, and Dr. Barber discontinued it the next day. Mr. Herbert continued to breathe following removal from the respirator but remained comatose. Two days later, at the family's insistence, I.V. feedings were removed; Mr. Herbert died six days later. Sandra Bardenilla, nursing supervisor of the ICU, who objected to the decisions and the decision making process, found no one who would give serious consideration to her concerns. She resigned, went to the County Department of Health, and began a process that resulted in arrest and charges of murder against Dr. Barber and Dr. Nedjl, the surgeon. The municipal court judge dismissed the charges, stating that "The duty to treat ceases when there is no further potential for recovery."[8] The case was appealed to the Superior Court, where the judge ruled that the physicians must stand trial on the charge of murder, because:

> "it is apparent that this (the physician's) duty encompasses the sustenance of life . . . murder is the shortening of life . . . acts of the defendants (in removing life-sustaining treatment) shortened the life of the victim . . . Mr. Herbert did not give permission to the withdrawal of these lifesustaining procedures as provided by law . . . California does not condone mercy killing nor the doing of an

> act that ends the life of another other than through the natural process of dying . . . *the morality of the defendants' conduct, the purity of their motives, common practice in this type of situation, and the wishes of the decedent's family are all of no weight . . . the answer lies in the law of the state."* (emphasis added)[9]

California law states that life-support systems may be removed upon a finding of brain death or if a person has executed a valid living will. Although the physicians were acquitted of the murder charges by the appellate court in October, 1983, their personal and professional lives were disrupted for many months, and they incurred legal fees of over $750,000. Together with the hospital, they face a $25 million malpractice suit brought by Mr. Herbert's wife, who now claims that she was told that her husband was brain dead, and, had she known that this was not the case, she would not have consented to removal of life-support systems.

What difference might an ethics committee have made? The absence of policies, guidelines, and a forum for decision making for termination of treatment in the ICU was a major part of Nurse Bardenilla's frustrations. Development of policies and guidelines is one function of ethics committees, although it must be preceded by intensive education of the committee members and of hospital staff. Consultation with a prepared, experienced ethics committee would have provided a forum for discussing the frustrations, differences in professional values and opinions, and an opportunity for the physicians to gain a broader perspective on the issues involved. Discussion with a committee might also have assured that the family fully understood the diagnosis and prognosis. It is possible that the legal complications might have been avoided by such consultation. For example, an experienced committee would have advised the physicians to completely document the relevant facts and circumstances in the medical record, potentially preventing the ensuing civil suit.

Father John Paris summarizes the benefits of an ethics committee by quoting a letter he received from Bruce Zawacki, M.D. commenting on the Herbert case:

> "One of the great advantages of an ethics consultation service in a hospital is to prevent such precipitous decision making and to allow all of those concerned, including unhappy nurses, to be heard fully in the open. Open discussion between physicians, nurses, patients, and family is trustbuilding, whereas closed, hushed-up, behind the door decision making breeds the kind of distrust which leads to Baby Doe Hotlines."[10]

2. The Torres Case

Rudolpho Torres was a 57 year old man who, in July, 1983, while a patient at Hennepin County Medical Center in Minneapolis, suffered severe brain damage as the result of an improperly placed restraint device. In February, 1984, after the prognosis of permanently unconscious state had been established, Ronald E. Cranford, M.D., a neurologist at HCMC and co-chair of the hospital's biomedical ethics committee, requested consultation from the ethics committees of three Twin Cities Hospitals to "assess what a reasonable standard of practice in the community would be toward a patient in this condition."[11] These were experienced ethics committees; each determined that removal from the respirator would be consistent with biomedical ethical principles. Their reports are seminal documents for institutional ethics committees.[12]

The committees' conclusions were quoted in the decisions of the probate court judge who ordered removal of the respirator[13] and in the decision of the Minnesota Supreme Court which upheld the probate court's decision.[14] In November, 1984, Mr. Torres was removed from the respirator and died 13 hours later.

The Torres case illustrates the benefits of consultation with experienced ethics committees, and the increasing recognition of their importance by physicians, hospitals, and the courts in decision making related to foregoing life-sustaining treatment. The role of institutional ethics committees in other types of dilemmas and in other settings is not as well developed, although the benefits of a multidisciplinary review of the ethical issues involved in other situations are being identified. Infant bioethics committees are one example of an expanded role; decision making related to the allocation of scarce medical resources is another. Nursing homes and other long term care institutions are examples of settings in which physicians are frequently confronted with ethical dilemmas, whether or not to resuscitate, or to transfer an elderly and/or terminally ill person to an acute care hospital. IECs can clarify and advise on the ethical issues involved in these situation. The educational function of ethics committees in itself will contribute much to our understanding of the complex dilemmas accompanying modern health and medical care.

III. Functions, Composition and Concerns

Functions

The three principal functions of the institutional ethics committee are: *education; policy and guideline development; and consultation.*

1. Education

The educational role, the first task of an ethics committee, can be accomplished in a number of ways. Education of the committee members, both individually and as a body, can be accomplished through review and discussion of articles and presentations by outside experts. Education requires a considerable commitment of time by committee members and potential members: time for reading the increasing body of literature on medical ethics and on institutional ethics committees; time to attend seminars and conferences. Institutions should budget funds for educating their IEC members. Extending this educational role to the broader institution, the committee might sponsor conferences, act as a clearing house for resources including films, books and articles, provide a forum for sharing of information among hospital personnel, and conduct ethics rounds where interesting cases are discussed. Some hospitals have developed staff education programs in medical ethics through continuing medical education and/or nursing education programs.

2. Policy and Guideline Development

Although IECs do not set institutional policies or adopt guidelines, they can facilitate their development by assessing the need for and/or implementation of policies or guidelines in specific areas, for example, Do Not Resuscitate, decision making for treatment of seriously ill newborns and for incompetent patients. IECs also must develop policies, guidelines, and procedures for their own activity. They can research and review existing policies and guidelines, modify them to meet the needs of their own institutions and the communities which they serve, and recommend them to the approving body (whether it be the executive committee of the medical staff, the administration, or board of trustees). IECs can assist in the implementation and evaluation of policies by periodic review to assure that policies, guidelines and procedures are being followed and if modification or staff and patient education is needed.

3. Consultation

The consultative function involves both prospective and retrospective review of specific cases. Review can be initiated by the attending physician, by other staff, patient and/or family, or the committee itself. IEC recommendations are non-binding. Retrospective review can involve specific cases or categories of cases, such as all seriously ill newborns or other incompetent patients where treatment was not initiated or was withheld, transplant decisions, or decisions to transfer from a nursing home to an acute care hospital. The purpose is to review the decision making process; recommendations of the committee are advisory only.

IEC review may reduce the incidence of judicial review, especially those cases that involve foregoing treatment for incompetent patients, such as Clarence Herbert or Rudolpho Torres. Judicial review is costly, intrusive and generally disruptive; there is growing support, and precedent, for IEC review as an alternative to referral to the courts, although the latter is an alternative that is always available. Just as IECs are not substitutes for physician judgment, neither are they substitutes for legal review when that is deemed necessary.

Composition

Because ethical dilemmas frequently involve conflicts in value systems, IECs should represent a cross-section of the institution and of the community the institution serves. Membership should include staff representatives from services in which ethical dilemmas occur most frequently within their institution, e.g., neonatology, neurology, dialysis, gerontology. Community representatives, i.e., persons not on the institutional staff or formally associated with it, such as ethicists, lawyers, or lay persons may be needed to assure a multi-disciplinary perspective. Some institutions may need special community representatives such as members of an organization for a specific handicap. At a minimum, ethics committee membership should include physicians, nurses, other health professionals, social worker, clergy or ethicist and administration. Institutions should develop a model that fits their own needs, recognizing the evolutionary nature of committees—composition and functions will change over time, within the overall framework described above. Some information is available in the literature regarding operational and procedural issues.[15]

Liability and Confidentiality Concerns

Although an ethics committee is not a substitute for physician judgment, an IEC can advise and may reduce the probability of legal action following a decision that is made when the principal parties are faced with an ethical dilemma. It is essential that physicians document consultations with ethics committees and other events, including results of discussions with families of incompetent patients. If a patient has a living will or other advance directive, this should be part of the medical record.

Concern has been expressed about the confidentiality of IEC meetings and records, and whether ethics committees should be part of the medical staff or the governing board of an institution, i.e., an administrative staff committee. An excellent discussion of confidentiality, immunity and accountability for IECs, within the context of Minnesota law, is available.[16] The tentative conclusions are that Minnesota Statute 145.61-.67 "erects a fairly complete shield of confidentiality (to cover the functions of an IEC)," and "The statute makes no distinction between 'medical staff' or 'administrative staff'; apparently both are protected.[17] More research is needed in the areas of immunity and confidentiality, however.

IV. Summary

What actions can physicians take to establish ethics committees? They can:

- initiate discussion with the hospital and nursing home administrative, medical and nursing staff about the benefits of an IEC;
- promote a formal assessment of current decision making practices within the institution in which they serve;
- urge the administration and trustees to budget money and provide administrative staff for the ethics committee;
- begin the process of learning by self-study.

Medical advances have made matters that once were the sole province of fate now subject to human choice. A multi-disciplinary, well-structured, well-prepared ethics committee can help educate institutional staff and the broader community, facilitate the development of policies and guidelines related to various ethical dilemmas, and offer its considered advice on difficult decisions to forego medical treatment. This assistance may render these choices less troublesome and onerous for all involved. The Minnesota Medical Association supports the formation of such committees in hospitals and nursing homes, and urges that physicians take a leadership role in their establishment and activities.

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Contraindications: Severe left ventricular dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (except in patients with a functioning artificial ventricular pacemaker), 2nd- or 3rd-degree AV block. **Warnings:** ISOPTIN should be avoided in patients with severe left ventricular dysfunction (e.g., ejection fraction < 30% or moderate to severe symptoms of cardiac failure) and in patients with any degree of ventricular dysfunction if they are receiving a beta blocker. (See *Precautions.*) Patients with milder ventricular dysfunction should, if possible, be controlled with optimum doses of digitalis and/or diuretics before ISOPTIN is used. (Note interactions with digoxin under *Precautions.*) ISOPTIN may occasionally produce hypotension (usually asymptomatic, orthostatic, mild and controlled by decrease in ISOPTIN dose). Elevations of transaminases with and without concomitant elevations in alkaline phosphatase and bilirubin have been reported. Such elevations may disappear even with continued treatment; however, four cases of hepatocellular injury by verapamil have been proven by rechallenge. Periodic monitoring of liver function is prudent during verapamil therapy. Patients with atrial flutter or fibrillation and an accessory AV pathway (e.g. W-P-W or L-G-L syndromes) may develop increased antegrade conduction across the aberrant pathway bypassing the AV node, producing a very rapid ventricular response after receiving ISOPTIN (or digitalis). Treatment is usually D.C.-cardioversion, which has been used safely and effectively after ISOPTIN. Because of verapamil's effect on AV conduction and the SA node, 1° AV block and transient bradycardia may occur. High grade block, however, has been infrequently observed. Marked 1° or progressive 2° or 3° AV block requires a dosage reduction or, rarely, discontinuation and institution of appropriate therapy depending upon the clinical situation. Patients with hypertrophic cardiomyopathy (IHSS) received verapamil in doses up to 720 mg/day. It must be appreciated that this group of patients had a serious disease with a high mortality rate and that most were refractory or intolerant to propranolol. A variety of serious adverse effects were seen in this group of patients including sinus bradycardia, 2° AV block, sinus arrest, pulmonary edema and/or severe hypotension. Most adverse effects responded well to dose reduction and only rarely was verapamil discontinued. **Precautions:** ISOPTIN should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of excessive pharmacologic effects. Studies in a small number of patients suggest that concomitant use of ISOPTIN and beta blockers may be beneficial in patients with chronic stable angina. Combined therapy can also have adverse effects on cardiac function. Therefore, until further studies are completed, ISOPTIN should be used alone, if possible. If combined therapy is used, close surveillance of vital signs and clinical status should be carried out. Combined therapy with ISOPTIN and propranolol should usually be avoided in patients with AV conduction abnormalities and/or depressed left ventricular function. Chronic ISOPTIN treatment increases serum digoxin levels by 50% to 70% during the first week of therapy, which can result in digitalis toxicity. The digoxin dose should be reduced when ISOPTIN is given, and the patients should be carefully monitored to avoid over- or under-digitalization. ISOPTIN may have an additive effect on lowering blood pressure in patients receiving oral antihypertensive agents. Disopyramide should not be given within 48 hours before or 24 hours after ISOPTIN administration. Until further data are obtained, combined ISOPTIN and quinidine therapy in patients with hypertrophic cardiomyopathy should probably be avoided, since significant hypotension may result. Clinical experience with the concomitant use of ISOPTIN and short- and long-acting nitrates suggest beneficial interaction without undesirable drug interactions. Adequate animal carcinogenicity studies have not been performed. One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. *Pregnancy Category C:* There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor and delivery only if clearly needed. It is not known whether verapamil is excreted in breast milk; therefore, nursing should be discontinued during ISOPTIN use. **Adverse Reactions:** Hypotension (2.9%), peripheral edema (1.7%), AV block: 3rd degree (0.8%), bradycardia: HR < 50/min (1.1%), CHF or pulmonary edema (0.9%), dizziness (3.6%), headache (1.8%), fatigue (1.1%), constipation (6.3%), nausea (1.6%), elevations of liver enzymes have been reported. (See *Warnings.*) The following reactions, reported in less than 0.5%, occurred under circumstances where a causal relationship is not certain: ecchymosis, bruising, gynecomastia, psychotic symptoms, confusion, paresthesia, insomnia, somnolence, equilibrium disorder, blurred vision, syncope, muscle cramp, shakiness, claudication, hair loss, macules, spotty menstruation. **How Supplied:** ISOPTIN (verapamil HCl) is supplied in round, scored, film-coated tablets containing either 80 mg or 120 mg of verapamil hydrochloride and embossed with "ISOPTIN 80" or "ISOPTIN 120" on one side and with "KNOLL" on the reverse side. Revised August, 1984 2385

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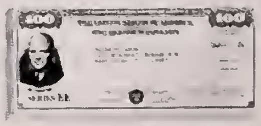

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Physicians Contemplate the Ethics and Economics of Health Care

Report of the MMA Ad Hoc Work Group on "Price of Life" Report

Executive Summary

The environment in which patients, family members and physicians must make treatment decisions is increasingly complex—complicated by the growing public debate regarding health care allocation and rationing strategies. In December, 1984, the Minnesota Coalition on Health Care Costs issued a report of a subcommittee entitled "Price of Life: Ethics and Economics" as a call for a community dialogue regarding these issues. The article which follows is excerpted from a report of a special study committee appointed by the Minnesota Medical Association to review the Coalition's report and contribute to the public discussion.

The first section of the report provides the perspective of the Minnesota Medical Association on bioethical dilemmas, medical technology, and rationing and access. The second section lists the specific recommendations of the "Price of Life" report and notes areas of agreement and disagreement. The reader may find it helpful to read the report "Price of Life: Ethics and Economics" in its entirety (available from the Minnesota Coalition on Health Care Costs).

As a result of both the success of medical technology and increasing economic pressures, society has begun to articulate that the ideal of "preference for life" has limits. Physicians have an obligation to give patients their best medical advice regarding available treatment options. If the patient is not mentally competent, physicians recognize the responsibility of family members and other caring guardians to make care decisions on behalf of the patient. Specific documentation of the patient's desires in the medical record, living wills and the designation of proxy decision makers can facilitate decision making when patients are seriously ill. In addition, consultation with Institutional Ethics Committees may be helpful in extremely complex cases.

While much public discussion has emphasized the costs of medical technology, its benefits are highlighted as well in this article. The improvements in the health of the American public over time, both as a result of advances in scientific knowledge and technology and improvements in lifestyle are recognized. The physicians point out that it is both unrealistic and costly for health care consumers to expect the profession to "fix" badly abused bodies. Health promotion and disease prevention are supported as the first approach to improved health and well-being.

The report notes that there are essentially two levels of rationing: rationing of scarce medical resources and restrictions of access to resources as a cost containment measure. The physicians support the allocation of scarce organ resources on a first-come, first-served basis, rather than on "social worth" criteria. Rationing of services is more subtle, and in many senses, more troublesome to the American public. The conflict of the goal of open access to quality health care versus the goal of cost control has no simple solutions. Both attempts to contain supply and demand have hidden social costs in dollars and human terms. As we seek a resolution to the conflict, it is clear that increased dialogue among policy makers, the general public, physicians, and other providers is needed.

The physicians of Minnesota welcome opportunities to discuss these issues both in a formal way (through issue papers such as this one) and in a personal way, with our patients and their family members. The complex issues facing society, patients and physicians, are ever-evolving and not subject to easy answers. We must all work together toward increased understanding and consensus.

Report of the Minnesota Medical Association
Ad Hoc Work Group on "Price of Life"

I. Introduction

A significant issue confronting American society today is the conflict between the goals of open access to medical care and cost control. Dena Kleiman, a writer for the New York Times, notes in her series, "Prolonging Life—The New Dilemma": "Years ago death was a statement of fact; today it has become a dilemma of agonizing choices . . . although it is seldom discussed openly, doctors are struggling with an ingredient that for generations was not a part of their decisions about life and death: money."[1] With some exceptions, we have achieved open access and quality health care by virtue of public and private third party payment mechanisms which have insulated the consumer from the actual costs of health care (e.g. Medicare, Medicaid, insurance, HMOs). Now the financial cost of those policy decisions has become so great that policy makers have called for a dialogue to address the increasingly inseparable nature of medical technology, bioethical decisions, and the underlying theme: cost.

The President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavorial Research began to address these complex issues with their multi-volume report issued in 1983. The Minnesota Coalition on Health Care Costs advanced this dialogue in Minnesota with the issuance of the report "Price of Life: Ethics and Economics"—the product of a year-long study effort. Spurred by the increasingly complex environment in which patients, family members and physicians must make treatment decisions, increasing public debate regarding allocation and rationing strategies, and the Minnesota Coalition's call for local dialogue, the Minnesota Medical Association formed an ad hoc group chaired by Ann C. Vogel, M.D. of New Ulm to continue the discussion regarding ethics and economics.

This report of that group is organized in three major sections. The first section comments, from the perspective of physicians, on the complex issues of bioethical dilemmas, medical technology, and rationing and access. The second section is a response to the recommendations made in the Coalition's report "Price of Life: Ethics and Economics." The final section urges adoption by the MMA House of Delegates on two previously submitted resolutions. In the spirit of the dialogue begun by the Coalition Task Force, our report examines their "strategies to allocate limited resources." For, as David L. Graven, the Chair of the Coalition Task Force, has pointed out, the medical profession recognizes its own need for help in "facing the ethical choices arising out of the economics of high tech medical practice."[2] It does not matter much if the report "Price of Life" is focused too much or too little on one aspect or another of economics in medicine, such as catastrophic illness, where technology may be most visible to the lay public. What does matter is that we can start the dialogue anywhere and get to the ultimate questions when rationing is invoked. What is the proper role and relationship of individuals, medicine, and society?

II. Ethics and Economics-A Review of Complex Issues

Bioethical Dilemmas

Morris B. Abram, former chair of the President's Commission noted "For every illness, there is some procedure that can delay the moment of death. The question is: for how long, at what cost, at what pain, at what suffering?"[3] While it is possible to view health care as a means "to delay the moment of death," the physician's primary efforts focus rather on preserving and enhancing life, with the knowledge that most often there is hope for improvement. For the physician to be asked to make a judgment about the worth of a life entrusted to his or her care is to violate the essence of the patient/physician relationship. Cost, pain and suffering are all realities. But the real equation does not balance these realities against the mere delaying of death, but rather against the achievement of the continuation of a meaningful life and improved health.

The Judeo-Christian tradition upon which our society is based holds that life is sacred. From this basic belief is derived the concept that there is a presumed preference for life. Historically, the endeavor of medical care has been to preserve and extend life wherever possible. In the past, the limited means to influence the course of illness prevented society from having to deal with the problems created by success in this endeavor. As advances in medical knowledge and technology have improved our ability to intervene in the biological processes of life, to reduce the progress and damage of disease, and to restore health and prolong life, there is increased responsibility to use these services wisely.

As a result of both the success of medical technology and of increasing economic pressures, society has begun to articulate that the construct of "preference for life" has limits. Who is in the best position to deal with difficult treatment decisions? Physicians and other health care providers actively involve patients in discussions regarding their own care, including decisions to accept or refuse treatment, consistent with Minnesota's Patients' Bill of Rights. Physicians have an obligation to give patients their best advice regarding available treatment options. If the patient is mentally incompetent, physicians recognize the increased responsibility of the family or other caring guardians to participate in these care decisions on behalf of the patient.

Medical or surgical situations can be evaluated in terms of chances of varying degrees of success.While statistics can be helpful in the aggregate, accurate predictions of the degree of success of treatment for a given individual is generally not possible. For example, one can either accentuate the pain, cost of the treatment, and relatively high "failure" rate, or focus on the accomplishment that some of those treated have been given an extra year of life. Who makes the decisions regarding whether the procedures should be done? Is there a success rate target? What are the relative benefits, risks and costs for each individual patient? These decisions are best made on an individual basis in the context of the patient-family-physician triad, with benefits and risks for the various alternatives discussed openly.

Societal attitudes toward death and the treatment of the terminally ill are subject to change. Public discussion and debate essential to the process of change are welcomed by physicians. A recent policy report issued by the Minnesota Medical Association regarding health care for the elderly calls the Association to take "a leadership role in supporting the general public and the profession in gaining an understanding of the medical and ethical issues regarding the application of life support technology and increasing the patient's rights to accept and/or refuse treatment."[4] The report notes that inappropriate application of life support technology can prolong the patient's suffering and dying process to the detriment of the patient, the family, and all those involved in the caring process. The report further notes that physicians, other health care providers, and the general public are just beginning to discuss issues regarding the appropriate application of advanced life support technology in individual situations. A more difficult decision frequently is necessary at the start of medical intervention. Does one enter into an aggressive treatment program which promises a chance of success, but which also has a known high risk of failure and attendant costs?

Specific documentation of the patient's desires in the medical record, advance directives, living wills and the designation of proxy decision makers can facilitate decision making when patients are seriously ill. Since medical discretion is an essential ingredient in all treatment decisions, living wills should not be made legally binding. Living will should be honored by physicians whenever possible. Physicians are encouraged to explore the patient's preferences regarding treatment early in the course of a serious illness. It is particularly helpful for the discussion to precede a crisis situation, when meaningful decisions regarding patient care are more difficult to make.

In cases of more complex ethical dilemmas regarding care, the patientfamily-physician triad may benefit from outside consultation. In response to the increasingly complex ethical issues relating to medicine, some hospitals and nursing homes have formed institutional ethics committees (IECs). An IEC is "a multi-disciplinary group of health professionals within a health care institution that has been specifically established to address the ethical dilemmas that occur within the institution."[5] The principle functions of an institutional ethics committee are: education; policy and guideline development; and consultation to clarify issues. Model guidelines published in conjunction with the federal Baby Doe regulations in April 1985 encourage hospitals that provide health care to infants to establish Infant Care Review Committees. The Minnesota Medical Association endorses the formation of voluntary institutional ethics committees in hospitals and nursing homes, and encourages active physician participation in their formation and ongoing activities.

The definition and determination of death is critical to the wise use of life-sustaining treatment. In 1976, the Minnesota Medical Association was one of the first state medical associations to develop and adopt criteria for brain death. The MMA supports the adoption of a Uniform Determination of Death Act by the Minnesota State Legislature.

This legislation would recognize that the determination of death will be made, in most cases, on the traditional cardiovascular criteria, but would also include criteria for determining brain death when artificial life-sustaining treatment is used.

Another ethical dilemma in this era of cost containment is whether caregivers should act for the good of society or for the good of the individual. While these are often synonymous, there are conditions in which cost containment considerations impinge unduly on the appropriate care of a patient. For example, with the application of Medicare's Prospective Payment System under Diagnosis Related Groups, hospitals receive the same payment for all persons within a given diagnosis category, regardless of the amount and type of services actually provided. This may lead to pressures to make patient care decisions based on economic considerations. The Judicial Council of the American Medical Association has noted "to expect a physician in the context of his medical practice to administer governmental priorities in the allocation of scarce health resources is to create a conflict with the physician's primary responsibility to his patients that would be socially undesirable."[6] Physicians are responsible for providing quality health care economically. Yet, they should neither be, nor be perceived as, rationers of health care resources. The public, patients, and physicians should all be clear that the primary responsibility of the physician is to advocate in the patient's best interests.

Medical Technology

Medical technology has been broadly defined by the Office of Technology Assessment as: "the set of techniques, drugs, equipment and procedures used by health care professionals in delivering medical care to individuals and the systems in which such care is delivered."[7] Technology in general may be viewed as applied knowledge, entailing the use of mechanical, electrical, electronic, or chemical devices to achieve some effect or change in a system. Medical technology is designed to improve health, to prevent illness, or treat disease. The "Price of Life . . ." report issued by the Minnesota Coalition on Health Care Costs notes that the success of medical technology has "moved matters that were once the province of fate into human hands."[8] The report notes "We are now able to treat many patients who only a few years ago would have met certain death from disease or injury. Medical technology has also greatly expanded the range of treatment options available. This, in itself, makes treatment decisions more difficult."[9] It also notes that new advances in medical technology are raising new ethical dilemmas.

Cost is increasingly discussed in relation to technology. While concerns regarding the costs of medical technology are not without merit, critics often fail to fully comprehend the dramatic improvements in American health which have resulted from advances in scientific knowledge and the appropriate application of medical technology. Infant mortality rates have decreased steadily in the last two decades, from 24.7 infant deaths per 1000 live births in 1965 to a new low of 10.9 in 1983. Life expectancy has also shown impressive gains, due in large part to decline of death rates from heart disease and strokes. Many communicable diseases have been literally "stamped out" through the development and use of vaccines. Antibiotics have added significantly to the physician's ability to restore health. Quality of life has been restored to many through recent developments such a corneal implantation, total joint arthroplasty, cardiac pacing, dialysis and renal transplantation, diagnostic imaging, etc. Medical technology works! It has brought to our society a level of health never before enjoyed. Further, medical technology and health care services are an integral part of our economy. The health care industry is one of the nation's largest employers. And, since the benefits of medical technology often restore people to healthy, productive lives, our overall economy is strengthened rather than weakened by its application.

Many advances in the overall health of our citizenry result not from "high tech" applications, but rather from individuals exercising personal responsibility to practice good health habits. The adoption of healthy lifestyles (e.g. not smoking, eating a balanced diet, adequate sleep and exercise, seat belt use, moderate consumption of alcohol, etc.) and seeking medical advice and care early are responsible for significant improvements in health. In stressing the importance of adequate prenatal care, the "Price of Life . . . " report notes that for every hour a premature baby (24 to 30 weeks) remains in utero saves $100 in neonatal intensive care costs. Medical technology should not be seen as an alternative to responsible self care. The mentality that the physician can "fix" even the most badly abused body denies the personal responsibility one has for one's own health. This type of thinking imputes greater power to the health care system than it can realistically achieve, and is a costly approach. We strongly support health promotion and disease prevention as the first approach to improved health and well-being. Technology can compensate, in part, for the maladies beyond the individual's ability to control.

Medical technology draws on the successes of other fields including chemistry, physics, metallurgy, communications, and basic biologic research. Many of the advances in today's medical technology are a result of research conducted for the space program. The medical community should participate in evaluating the overall clinical efficacy of developing technologies prior to widespread use. Physicians should critically examine the appropriateness and expected efficacy of the application of a particular diagnostic or therapeutic treatment approach for a given patient. Likewise, those who weigh the costs of the application of technology must also take into account the benefits resulting from its use.

Concern regarding the cost of medical technology has caused some groups to recommend that its advancement be curtailed. Rather than focusing on how to limit or channel the development of medical technology, a more appropriate emphasis would be the assurance that technology is used appropriately in each case. Patient demand for a particular "high tech" procedure (such as an ultrasound) without clear clinical indications increases costs unneccessarily. So, also, patients and family members frequently request that "everything possible be done" for the seriously ill patient. Physicians have been accused of pursuing aggressive medical intervention in the face of a poor prognosis. Patients, family members and physicians must all become acutely aware that the application of advanced life support technology may not be the most appropriate response for a given patient. Increased comfort with a supportive rather than a curative treatment goal for seriously ill patients not realistically expected to recover can come through greater understanding of complex medical and ethical issues regarding life support technology.

Access and Rationing

Senator David Durenberger has noted "paradoxically at the same time public pressure mounts for government to control medical costs, there also is pressure for government to pay for new technologies . . . If we limit what we will spend, we will invariably limit access to new technology . . . We can either deal with rationing questions explicitly and try to come to grips with the difficult ethical and moral issues they raise, or, we can hide our heads in the sand and ration services implicitly as government slaps cost controls on the health care system . . . "[10]

Public calls for rationing of health care and reassessment of allocation decisions may be geared to the notion that health care should require no more than ten percent of our nation's Gross National Product. This is a tenuous notion at best, and ignores the truly macro-level allocation decisions among such public goods as defense, education, transportation, entertainment, health care, etc. However, without re-thinking our current system, we are faced with the ultimate irony: "Now that medical prospects are virtually limitless, resources are not."[11]

There appear to be two levels at which rationing issues are under discussion: the first relates to the rationing of scarce medical resources, such as hearts and kidneys, and the second to restricting access to resources as a societal cost containment measure.

Rationing Resources - The first issue, allocating scarce human organs for transplantation, is the kind of rationing which is generally well tolerated, providing there is a sense of fairness associated with the distribution process. Factors such as the limited number of centers performing the procedures, limited number of donor organs, and the chance that an available organ will match a given individual in need, play a large part in deciding who will and will not receive the resource. George J. Annas, J.D., MPH has suggested that the most fair and efficient approach for distributing scarce organ resources would be an initial screening process based exclusively on medical criteria, followed by a first-come, firstserved method, with an opportunity to "jump the queue" if in danger of imminent death. The Minnesota Coalition's report recommends a similar type of rationing plan adding an evaluation on the basis of a "constituency factor" such as clientele factors and geographic boundaries.

Rationing Services - The second level, rationing access to health care services as a cost containment measure, is more troublesome to the American public. How did health care costs get out of control so that we even have to discuss rationing? A historical review can lead to some insights about the origin of the rise in costs and the basic means by which costs can be controlled.

Prior to World War II, access to health care was based mostly on one's ability to pay the bill. After the War, our Congress (like other Western democracies) responded to problems of medical access and equity by creating a de facto national health insurance program in a piecemeal fashion for certain segments of the population. First, private health care insurance premiums were made tax-exempt and, next, public insurance was created for the old (Medicare) and poor (Medicaid). Cost-price inflation in medicine subsequently rose at a rate greater than the cost-price inflation rate for all other areas of the economy for the first time since the post Civil War 1870s.[12] With some exceptions, America has achieved open access and quality of medical care in abundance after the price tag of medical services was hidden by insurance subsidies and tax monies.

The consumer demand portion of the equation of increasing costs is becoming even more complex as people are living longer, the chronicity of their conditions thereby increases, and public expectations for cures are greater. Adding further to the complexity of demand inflation is the threat of malpractice which has engendered more testing as a defensive measure by medical practitioners.

Rationing Policy Options - Policy solutions which have been proposed to control costs of services include variance of two major themes: constraining supply or demand. Barriers to supply can be created by government regulation or health insurance corporations. Barriers to demand can be created by price.

Rationing Supplies - Attempts to contain supply include regulatory means such as certificate of need, auditing utilization through peer review organizations, and freezing physician fees. Other means of controlling the amount of care provided can be achieved by paying a prospectively set price for services such as in health maintenance organizations (HMOs), in the Medicare PPS/DRG program, and in Medicaid programs by contracting services through bids from HMOs and other competitive medical plans. Proponents of restraining services through using prepaid care arrangements assume the organization will be influenced by their incentives or profit motives to utilize cost-effective providers, technology, and settings. Jane E. Sisk, Ph.D. of the Office of Technology Assessment, has noted possible methods include controlling the number and kind of resources available and establishing policies about the coordination of services and preferred setting for therapy. Critics of the prepayment approach have noted the patient's freedom to select providers is limited and could lead to competing delivery systems skimping on services so resources could be channeled to increase marketing efforts and to increase profits.[13]

Rationing Demand - Attempts to contain demand have focused on ways to increase cost sharing to consumers and a specific variant on that theme, the repeal of health care tax subsidies. According to Dr. Sisk, cost sharing "clearly deters people from seeking care and results in a lower annual percentage of the population's having contact with the medical system" and that "the reluctance for patients to pay for expensive settings would lead physicians to use less expensive settings and technology."14 Martin Felstein advocated such cost sharing by consumers in the early 1970s.[15] His plan recommended the repeal of health care tax subsidies, and replacement of those subsidies with government insurance for catastrophic financial losses (defined as 10% of annual income).

Under this approach, persons would directly compare the cost of insuring first-dollar care at the risk of spending a like amount on small predictable expenses. The expectation is that when the high cost of insuring first-dollar care is no longer hidden by a tax subsidy, people would buy a much cheaper policy with a high deductible. Newhouse calculated the effect of cost sharing and suggested it could not only stop costprice inflation but would actually roll it back.[16] However, critics noted that "even with annual catastrophic expense limits that were related to income, it seems likely that low income people would be deterred from seeking care more than others because of the initial sums involved."[17] Brook has recently found that patients who were cost-sensitive for outpatient care did not have significant changes in quality of health care results or in their children's utilization of services.[18,19] Proponents of the approach to return price and cost-sensitivity to the majority of citizens (and not those on Medicare or on Medicaid), have noted that Congress fears political reprisals if it repeals a popular health care tax subsidy.

Section Summary

The conflict of the goal of open access to quality health care versus that of cost control has no simple solutions. Attempts to contain supply or demand have hidden social costs in dollars and in human terms. For example, government regulators or private insurance corporation managers relying on budgeting processes for political or stockholder purposes would have no accurate measure of consumer preferences. The budgeting process might then only become arbitrary or be perceived as self-serving. In contrast, placing the budgeting process onto consumers by making them costsensitive would accurately inform providers where to expand or reduce services by the aggregate of millions of consumer decisions, but would create a price barrier for the majority of citizens. Creating barriers to supply or demand can control costs, but careful evaluation is needed. These barriers can shift costs to those least able to pay. Further, such barriers can pose new problems for people's desires to be free from manipulation by government or private bureaucracies.

As each method of rationing is analyzed, we must ask these questions: Does this method preserve the proper relationship of the individual and society? Does this method mean that the physician is the agent of the patient or the agent of a government or private corporate bureaucracy? And, does this method preserve freedom of choice, equity, and human dignity for all citizens? It is clear that increased dialogue among policy makers, the general public, physicians, and other providers is needed.

III. Response to "Price of Life" Report Recommendations

	"Price of Life . . ." Report Recommendation	*Response*
I.	The Task Force supports the continued voluntary establishment of IECs and opposes, in principle, government regulation of the establishment, structure and functions of IECs. Hospitals and other care health care institutions should be encouraged to experiment to find the most appropriate structure and function for IECs to meet the requirements of the institution and its patients. ("Price of Life . . . " report, page i.)	Agree. This is correct MMA policy.
II.	The Task Force supports the development of guidelines for do-not-resuscitate orders, supportive-care-only orders, and treatment of critically ill and handicapped newborns, and for decision making in other treatment situations in order to help patients, health care professionals, and institutions better deal with difficult treatment decisions to protect individual and familial autonomy, to promote high standards of medical care, and to safeguard the rights of all parties. Moreover, the task force concludes that the current lack of national consensus on criteria and process for such treatment decisions requires that guidelines be developed locally so that they can accurately reflect community values. ("Price of Life . . ." report, page ii.)	Agree. The Minnesota Medical Association was the first state medical association to adopt do-not-resuscitate guidelines in January, 1981. Minnesota physicians have been active in the development of guidelines for the treatment of critically ill newborns and supportive-care-only guidelines at both a local and national level.
III.	The Task Force recommends that the Minnesota Legislature adopt the Uniform Determination of Death Act. Minnesota laws should be updated to better reflect medical knowledge and experience, to eliminate uncertainty over the legal standard for death, and to minimize the threat and fear of litigation in cases that hinge on the determination of death. ("Price of Life . . ." report, page ii.)	Agree. This is current MMA policy. The Minnesota Medical Association developed and adopted criteria for brain death in 1976. MMA was one of the first state medical associations to do so.

Response to "Price of Life" Report Recommendations—Continued

	"Price of Life . . ." Report Recommendation	*Response*
IV.	To enable people to direct care at the end of their lives by assuring that decisions to forego life-sustaining treatment (and all other medical decisions) remain the decisions of competent fully-informed patients, and for incompetent patients are made on the basis of the patient's interests and desires, the task force: 1. Encourages physicians to fully inform patients about prognosis and alternative treatments available; 2. Encourages patients, families, physicians, and other health care professionals to discuss the issues surrounding life-sustaining treatment before the need for a decision arises; 3. Encourages the participation of churches, synagogues, schools, and other social institutions in the discussion of attitudes regarding death; and 4. Recommends the continued exploration of legal mechanisms to recognize and implement living wills or other "advance directives" created by individuals in which their preferences for medical treatment is indicated. ("Price of Life . . ." report, pages ii, iii.)	We agree with points 1 through 3. Regarding point 4 (legal mechanisms to recognize and implement living wills), we encourage patients to make their wishes known regarding medical treatment and recognize the living will as one appropriate way to express preferences. Physicians should, and generally do, honor patient preferences for treatment when known. However, because medical judgment is an essential ingredient in every treatment decision, living wills should not be made legally binding. Further, people frequently change their minds when the actuality of the situation arises. Health professionals should not be open to suit for not honoring preferences expressed in a living will when they had no knowledge of the same (e.g., living will stored in an inaccessible place; a cardiac arrest occurring outside a health care facility and the person is resuscitated on an emergency basis by paramedics, etc.) An open dialogue between patients, family members and physicians is a more effective and positive approach than the "exploration of legal mechanisms."
V.	The Task Force recommends extensive programs on the part of government, health care institutions, and other major actors in health care, to educate health care professionals, employers, third-party payors, policy makers, and the general public about the reality of, and need to deal with, limited health care resources. The education programs should focus on both the details of alternative actions to re-allocate health care resources in order to slow the drift toward rationing, and on the ethical, social, legal, theological, and economic issues associated with the allocation and rationing of limited resources. ("Price of Life . . . report, page iv.)	Agree. The MMA has continued to address various facets of these problems in position papers, including: "New Directions for Health Care" (report of the Minnesota Commission on Health Care Costs sponsored by the MMA) (1979); "Health Care Competition and Regulation—A System in Transition—A Minnesota Physicians' Perspective" (1983); "Policy on Medical Assistance" (1983); "Medical Ethics in a Competitive Environment: The Physician's Role in Medicine—An Ethical Viewpoint" (1984); and "Health Care for the Elderly—A Minnesota Physicians' Perspective" (1985). In 1984, the MMA implemented the Public Education Program to begin a dialogue on these and other topics with the general public.

Response to "Price of Life" Report Recommendations—Continued

"Price of Life . . ." Report Recommendation	*Response*
VI. The Task Force recommends the development of new, and the expansion of existing, prevention programs offered by employers, health maintenance organizations, and other providers and payors of health care. The Task Force also recommends increasing the proportion of health care expenditures by state and local authorities in Minnesota devoted to public health, especially in the area of prenatal care and health education. And the Task Force suggests that employers, health care providers, and public and private third party payors provide financial and other incentives to consumers to participate in prevention activities. ("Price of Life . . ." report, page iv.)	Agree. However, preceding this recommendation, the report notes that the "current bias against prevention and public health programs" should be eliminated. While we would agree there is a societal imbalance in the appropriation of funds for prevention and public health programs vis-a-vis medical treatment, we would argue there is not a "bias"—that is, a negative attitude against health promotion and disease prevention. Physicians in our state and the Minnesota Medical Association have a strong track record in support of public health measures. We strongly support the increased preventive medicine emphasis in the area of prenatal care. The MMA's Resource Group on Maternal and Child Health anticipates assisting in a statewide perinatal mortality study later in 1985, pending funding. We agree with point #1 through the methods cited below.
VII. To promote the development and application of cost-effective and health-preserving technologies, and to review existing health care technologies in order to identify and reduce the utilization of inefficient technologies, the Task Force recommends: 1. That comprehensive assessements be preformed of emerging and existing medical technologies;	Emerging and existing medical technologies are constantly being assessed and reassessed in the medical literature. We also look to such entities as the Office of Technology Assessment, the American Medical Association through their Diagnostic and Therapeutic Technology Assessment (DATTA) program, medical specialty societies, and third party payment assessement entities to carry on this work.
2. The establishment of a national center, cosponsored by organizations currently involved in technology assessment, to stimulate, coordinate, commission, and/or conduct assessments of emerging medical technologies and to widely disseminate the findings along with other information on medical technologies; and	Regarding #2, we disagree with the recommendation to form yet another national center.
3. That based on assessments of emerging medical technologies, research and development money from all public sources be targeted toward development and diffusion of medical technologies that have the greatest potential to reduce costs, improve access to basic care, or enhance the quality of life. (Price of Life . . ." report, page v.)	Regarding #3, we agree, but are concerned with efforts which would appear to block basic research and inhibit creativity and innovation in pursuit of cost containment goals.

Response to “Price of Life” Report Recommendations—Continued

“Price of Life . . .” Report Recommendation	*Response*
VIII. These strategies are presented to promote debate and discussion over how society could meet its obligations to assure a “basic level of health care” to all. (Price of Life . . .” report, page v.)	This is not a specific recommendation of the Coalition’s Task Force. However, many community groups, including the Minnesota Medical Association, have used the phrase “basic health care” without actually agreeing upon what is included in a “basic health care” package. Recognizing the need to be more specific, several groups have suggested the issue be explored extensively in the coming year. A resolution submitted by the MMA Board of Trustees to the 1985 MMA House Delegates urges that such a study be given priority emphasis in the Association’s work program as well.
IX. The Task Force urges renewed emphasis on the prevention of premature birth—with particular focus on reducing the incidence of very low birth weight infants. Specifically, the Task Force recommends: 1. That commercial insurers, Blue Cross/Blue Shield of Minnesota, health maintenance organizations, and all other third party payors, provide coverage for comprehensive prenatal care in all health care policies and plans issued in Minnesota; 2. That the Minnesota legislature made appropriate statutory and regulatory changes to provide comprehensive prenatal care for pregnant women in Minnesota who are not covered by private third party payors; 3. That all public and private comprehensive prenatal programs be tailored to address the particular problems of population groups that experience above average incidence of premature births; 4. That all public and private comprehensive prenatal programs contain financial and/or other incentives to promote their utilization; and 5. The development and adoption by health care providers and payors of screening programs to identify pregnant women at high risk for premature birth. (“Price of Life . . .” report, page vi.)	Agree. We strongly support an increased emphasis on early prenatal care. The MMA Resource Group on Maternal and Child Health has sponsored clinical reviews of maternal deaths for nearly two decades, reviews of perinatal deaths more recently, and is contemplating assisting in an evaluation of perinatal mortality later this year.

Response to "Price of Life" Report Recommendations—Continued

	"Price of Life . . ." Report Recommendation	*Response*
X.	The Task Force concludes that the trend toward financing non-experimental organ transplants through insurance should continue. The Task Force recommends that organ transplant coverage in health benefit plans and policies include quality and cost control measures. The Task Force also recommends that coverage for organ transplants should remain optional for the group purchaser. ("Price of Life . . ." report, page vii.)	Agree. The MMA formed a Subcommittee on Organ Transplants in late 1984 that is examining the issue of organ transplantation from a broad perspective—including donor, recipient and payer issues, and their social, ethical and economic implications.
XI.	The Task Force recommends that the rationing of transplantable organs involves three sets of criteria. The first level of selection should be made on the basis of a constituency factor, such as clientele and geographic boundaries. The pool of eligible patients would then be screened according to the probability of successful treatment, the quality of life for the patient, and how long that quality will continue. The final selection should be made on the basis of chance (either natural, such as "first-come, first-served," or artificial, such as a lottery). The development of guidelines for selecting organ transplant recipients, and their subsequent implementation and application, should be the responsibility of interdisciplinary groups within health care institutions. ("Price of Life . . ." report, page vii.)	Agree. The MMA's Subcommittee on Organ Transplants may address this during future deliberations.

IV. Recommendations

In light of our study of issues relating to medical technology and rationing, we recommend support by the MMA House of Delegates of two resolutions submitted for consideration at the meeting in May, 1985. Their "resolved" sections are noted below:

Resolution 9

RESOLVED, that the MMA establish a Resource Group on Medical Technology (RGMT) which will, in a continuing manner, study the economic, ethical and social aspects, both positive and negative, of the development and application of medical technology, and be it further

RESOLVED, that the MMA periodically report to the public the results of the deliberations of the RGMT, and be it further

RESOLVED, that the MMA continue to seek public forums to discuss candidly the problems and concerns of the public regarding the side effects as well as the economic, social and ethical implications of medical technology.

Resolution 22

RESOLVED, that the Minnesota Medical Association study and make policy recommendations to the House of Delegates regarding the various strategies being proposed to ration health care.

V. Summary

We appreciate the Minnesota Coalition on Health Care Costs has provided a forum for beginning a community dialogue regarding these complex issues of medical technology, bioethical dilemmas, access to care, and their relationship to cost. The physicians of Minnesota welcome opportunities to discuss these issues in a formal way (through issues papers such as this one) and in a personal way, with our patient and their family members. The complex issues facing society, patients and physicians, are ever-evolving and not subject to easy answers. We must all work together toward increased understanding and consensus.

**Submitted by MMA Ad Hoc
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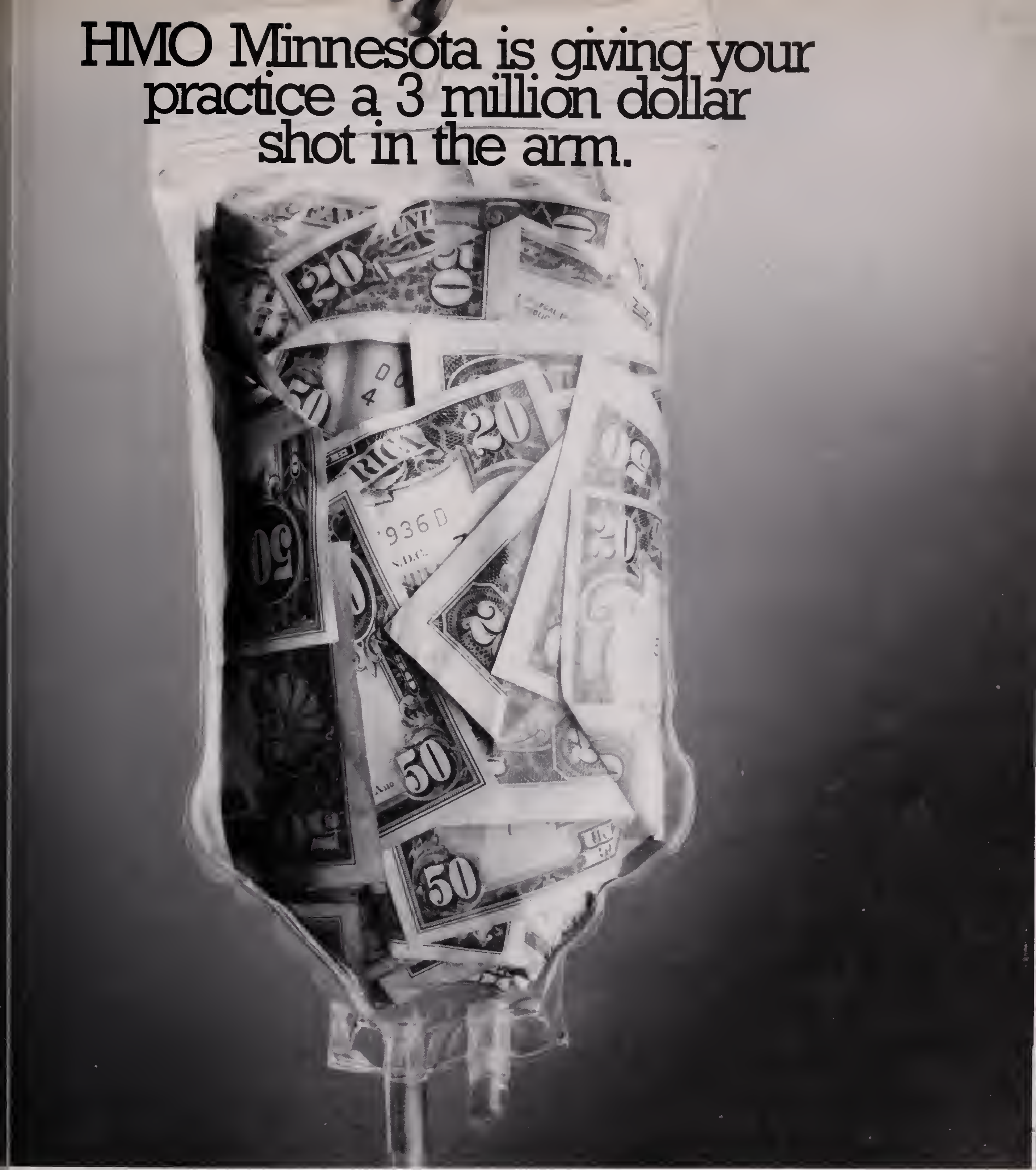

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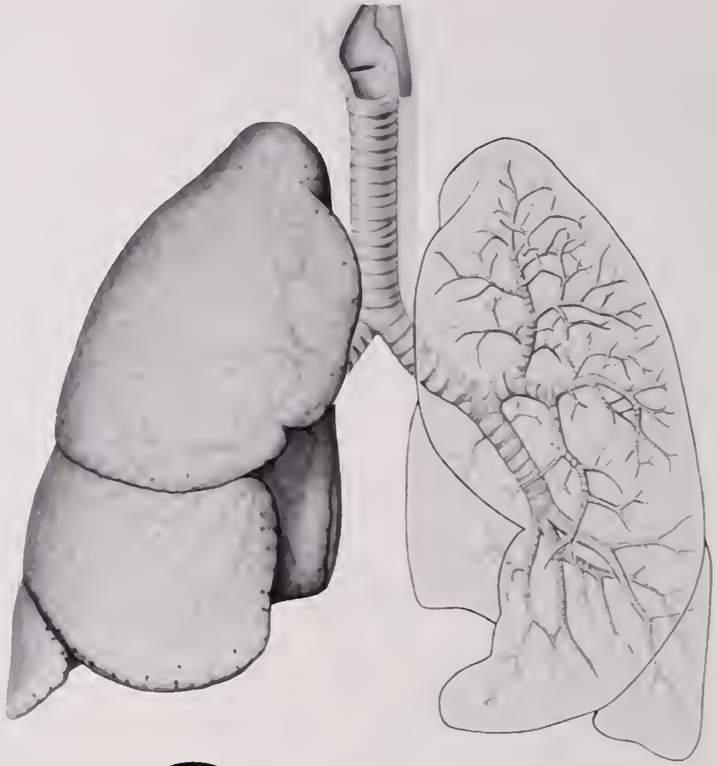

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Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out

Precautions *General Precautions* – If an allergic reaction to Ceclor® (cefaclor, Lilly) occurs, the drug should be discontinued and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis

Usage in Pregnancy – Pregnancy Category B – Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor® (cefaclor, Lilly). There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed

Nursing Mothers – Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one hour. The effect on nursing infants is not known. Caution should be exercised when Ceclor is administered to a nursing woman

Usage in Children – Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100). Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain – Transitory abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic – Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic – Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal – Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200)

[061782R

Note Ceclor® (cefaclor, Lilly) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information

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Allegation

Negligent failure to adequately communicate with an attending physician and negligent failure to correct error in dictation resulting in toxic side effects from medication overdose.

Facts of Case

The 27-year-old female patient was seen by Dr. X, an oncologist, on April 13, 1983, in consultation for treatment of metastatic carcinoma of the breast. Dr. X examined the patient and recommended an 18-month regimen of chemotherapy with 5-FU, Methotrexate and Cytoxan. The treatment recommendations were communicated to the attending physician in a typed consultation report which erroneously listed the dosage of Methotrexate at 660 mg, ten times the intended amount.

The patient was started on Methotrexate on April 19, and following her second dose, she developed severe stomatitis and a drop in her WBC. When Dr. X was contacted by phone regarding the side effects, he instructed the attending physician to reduce the dose by 50 percent. There was no discussion of the actual amount of Methotrexate being given.

The patient received one dose of Methotrexate at 330 mg with no reported side effects. Therefore, eight days later the patient again received 660 mg as originally prescribed. When the patient again developed stomatitis, the attending physician reduced the dose to 330 mg and continued this treatment until July. At this dosage level, however, the patient's WBC continued to drop, and the stomatitis recurred. Because of the patient's continuing side effects, Dr. X was again notified. Dr. X requested a written copy of the patient's medication record for review and discovered the error in the Methotrexate dosage.

Disposition

This case settled prior to litigation for a total of $10,000 with a contribution of $4,000 on behalf of Dr. X.

Reason for Settlement

Dr. X admitted that the amount of Methotrexate recommended in his consultation report was an error. Dr. X admitted that he probably only scanned the typed consultation report and, therefore, did not notice the error. The claimant obtained an expert opinion establishing that the high dose of Methotrexate caused her toxic side effects.

Risk Management Comments

A significant error in dictation or transcription which results in harm to the patient is indefensible. It is the physician's responsibility to ensure that all reports are accurate before they are signed. Entries in medical records should be proofread on an ongoing basis, particularly when the entry recommends treatment to be prescribed and monitored by another physician.

Failures in communication between the attending physician and the consultant expose both to liability for injury to a patient. Telephone communications are particularly difficult because of the lack of face-to-face patient contact. The attending physician should make sure that all relevant information is conveyed to the consultant. The consultant should review the patient's history and medical record and consider the necessity of seeing the patient before making treatment recommendations.

Drug-related claims account for approximately 10 percent of malpractice lawsuits. Patient medication records should be reviewed before changes are made in the way the medication is to be prescribed. Physicians and nurses should be familiar with the usual dosage and side effects of all medications prescribed and administered to the patient.

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prescribing, see complete prescribing information in SK&F CO.
re or *PDR*. The following is a brief summary.

RNING
drug is not indicated for initial therapy of edema or hypertension.
na or hypertension requires therapy titrated to the individual. If this
bination represents the dosage so determined, its use may be
convenient in patient management. Treatment of hypertension
edema is not static, but must be reevaluated as conditions in
patient warrant.

ndications: Concomitant use with other potassium-sparing agents
s spironolactone or amiloride. Further use in anuria, progressive
r hepatic dysfunction, hyperkalemia. Pre-existing elevated serum
um. Hypersensitivity to either component or other sulfonamide-
drugs.

**gs: Do not use potassium supplements, dietary or otherwise, unless
lemia develops or dietary intake of potassium is markedly impaired.**
lementary potassium is needed, potassium tablets should not be
yperkalemia can occur, and has been associated with cardiac irregu-
It is more likely in the severely ill, with urine volume less than
r/day, the elderly and diabetics with suspected or confirmed renal
iency. Periodically, serum K+ levels should be determined. If hyper-
develops, substitute a thiazide alone, restrict K+ intake. **Asso-
widened QRS complex or arrhythmia requires prompt additional**
Thiazides cross the placental barrier and appear in cord blood.
pregnancy requires weighing anticipated benefits against possible
, including fetal or neonatal jaundice, thrombocytopenia, other
reactions seen in adults. Thiazides appear and triamterene may
in breast milk. If their use is essential, the patient should stop
Adequate information on use in children is not available. Sensitivity
ns may occur in patients with or without a history of allergy or
al asthma. Possible exacerbation or activation of systemic lupus
atosus has been reported with thiazide diuretics.

tions: The bioavailability of the hydrochlorothiazide component of
e' is about 50% of the bioavailability of the single entity. Theoreti-
patient transferred from the single entities of Dyrenium (triamterene,
O.) and hydrochlorothiazide may show an increase in blood pressure
retention. Similarly, it is also possible that the lesser hydro-
iazide bioavailability could lead to increased serum potassium levels.
r, extensive clinical experience with 'Dyazide' suggests that these
ons have not been commonly observed in clinical practice. Do
serum electrolyte determinations (particularly important in patients
g excessively or receiving parenteral fluids, and during concurrent
th amphotericin B or corticosteroids or corticotropin [ACTH]).
BUN and serum creatinine determinations should be made,
lly in the elderly, diabetics or those with suspected or confirmed
sufficiency. Cumulative effects of the drug may develop in patients
paired renal function. Thiazides should be used with caution in
with impaired hepatic function. They can precipitate coma in
with severe liver disease. Observe regularly for possible blood
ias, liver damage, other idiosyncratic reactions. Blood dyscrasias
een reported in patients receiving triamterene, and leukopenia,
ocytopenia, agranulocytosis, and aplastic and hemolytic anemia
een reported with thiazides. Thiazides may cause manifestation of
diabetes mellitus. The effects of oral anticoagulants may be
ed when used concurrently with hydrochlorothiazide; dosage adjust-
may be necessary. Clinically insignificant reductions in arterial
iveness to norepinephrine have been reported. Thiazides have also
nown to increase the paralyzing effect of nondepolarizing muscle
s such as tubocurarine. Triamterene is a weak folic acid antagonist.
odic blood studies in cirrhotics with splenomegaly. Antihypertensive
may be enhanced in post-sympathectomy patients. Use cautiously
cal patients. Triamterene has been found in renal stones in asso-
with the other usual calculus components. Therefore, 'Dyazide'
be used with caution in patients with histories of stone formation.
ccurrences of acute renal failure have been reported in patients on
' when treated with indomethacin. Therefore, caution is advised in
tering nonsteroidal anti-inflammatory agents with 'Dyazide'. The
g may occur: transient elevated BUN or creatinine or both, hyper-
a and glycosuria (diabetic insulin requirements may be altered),
cemia and gout, digitalis intoxication (in hypokalemia), decreasing
serve with possible metabolic acidosis. 'Dyazide' interferes with
ent measurement of quinidine. Hypokalemia is uncommon with
', but should it develop, corrective measures should be taken such
ssium supplementation or increased dietary intake of potassium-
ds. Corrective measures should be instituted cautiously and serum
um levels determined. Discontinue corrective measures and
' should laboratory values reveal elevated serum potassium.
deficit may occur as well as dilutional hyponatremia. Concurrent
h chlorpropamide may increase the risk of severe hyponatremia.
PBI levels may decrease without signs of thyroid disturbance. Cal-
cretion is decreased by thiazides. 'Dyazide' should be withdrawn
onducting tests for parathyroid function.

s may add to or potentiate the action of other antihypertensive

s reduce renal clearance of lithium and increase the risk of lithium

Reactions: Muscle cramps, weakness, dizziness, headache, dry
anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermat-
conditions; nausea and vomiting, diarrhea, constipation, other
testinal disturbances; postural hypotension (may be aggravated by
barbiturates, or narcotics). Necrotizing vasculitis, paresthesias,
pancreatitis, xanthopsia and respiratory distress including pneu-
and pulmonary edema, transient blurred vision, sialadenitis, and
have occurred with thiazides alone. Triamterene has been found in
ones in association with other usual calculus components. Rare
s of acute interstitial nephritis have been reported. Impotence has
orted in a few patients on 'Dyazide', although a causal relationship
been established.

**: 'Dyazide' is supplied as a red and white capsule, in bottles of
apsules; Single Unit Packages (unit-dose) of 100 (intended for
onal use only); in Patient-Pak™ unit-of-use bottles of 100.**
L39

In Hypertension*...
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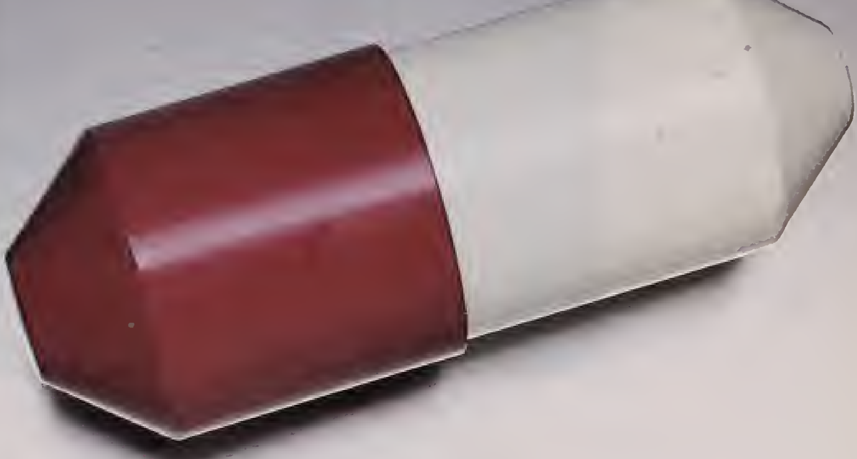
Serum K+ and BUN should be checked periodically (see Warnings and Precautions).



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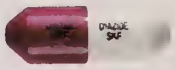

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Echoes from Our Past

Another Look at Medical Statistics

JACK D. KEY, M.A., M.S.*

Sir Austin Bradford Hill in his classic monograph "Principles of Medical Statistics" (1937) points out "Statistics are curious things. They afford one of the few examples in which the use, or abuse, of mathematical methods tends to induce a strong emotional reaction in non-mathematical minds. This is because statisticians apply, to problems in which we are interested, a technique which we do not understand."

A short article which appeared in the Lancet 1:245-246, 1867 considers some of the paradoxes involved with the fascinating business of conjecturing wholesale returns from trifling investments of fact.

> Gentlemen with a talent for figures seem to take as much delight in astonishing less gifted mortals with a gravely enunciated proposition which looks like very ingenious nonsense, as a boy does in blowing bubbles, or a Japanese "top-spinner" in bewildering lookers-on by the marvellous action he evokes from the dead matter of wood and string. If one might believe much that is written, the cynical objection which has been taken to statistics—that figures will prove anything—must be accepted as literal truth. Now we have no objection to this love of the parodoxical so long as it is chiefly developed in the direction of supplying certain periodicals with their customary column of puzzles, enigmas, etc.: but we do think that in documents dealing with the important events of life and death it would be better to avoid what we may call "figure gymnastics," and adhere to plain obvious deductions based on the good old principle that two and two make four, neither more nor less.
>
> We have lately seen it stated in one public document, that wherever and whenever a high death-rate prevails there also a higher birth-rate exists; and in another that a diminution in the birth-rate is a fair index of the increased health of the population. It is asserted that in towns where the birth-rate is high the increase of population from those births in excess of the average is an unproductive increase, as the children born for the most part die in infancy. Who is in a position to say that this deduction is sound? Where are facts to prove it? The theory of a diminished birth-rate proving an increased salubrity may possibly be applicable under special conditions; but its correctness as a general principle per se has never been satisfactorily demonstrated. The elements in the problem are too complex to warrant hasty generalization; and few statistical inquirers have either the time or the means to get together the necessary facts for its solution. Nothing would be easier than to show that a high birth-rate does not always go hand-in-hand with excessive mortality; indeed, if anybody will look at the ratios given by the Registrar-General for the principal cities of the kingdom, he will see at once that there is no uniform relation between the frequency of the two events. The rate of marriage, the proportions of the sexes, their age and condition, the nature of their occupation and social position, with a number of other circumstances, would have to be taken into account before the birth-rate could be relied on as a hygienic test.
>
> One of the documents to which we have been referring further says that when the rate of births in a town declines (allowing that the marriage rate is at the usual average) to a proportion nearer to that of healthy agricultural districts, it may be

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*Librarian, Mayo Clinic, Rochester, Minnesota.

> inferred that the parents were more healthy, and necessarily that the progeny have increased in constitutional strength. Now if, in consequence of the variation in the condition of the same population at different intervals, it be difficult to establish any relation between the birth-rate and salubrity of the same town in different years, it follows that the attempt to establish such a relation as a basis of comparison between that town and certain other districts of an entirely different constitution, must pro tanto be almost inevitably unsuccessful. Besides, we should take strong exception to the doctrine that agricultural districts, however healthy, supply a standard of births which expresses the limit of productive increase; such a notion is contrary to common-sense and experience, and shows a radical defect of observation.
>
> It is incumbent on all who propound strange views to give the fullest reasons for the faith that is in them; and statistical inquirers should, above all people, take special care to record the data on which their conclusions are founded. The tendency to adopt vague generalities as axiomatic truths is one of which men of figures ought to beware.

The perplexities of the art or science of statistics have been with us for a long time.

Annual Meeting
American College of Sports Medicine

The American College of Sports Medicine, Northland Chapter's Annual Meeting, will be October 25 and 26, 1985, at St. Cloud State University. A dynamic lineup of speakers revolving around the subject of body composition is scheduled. Inquiries regarding meeting or membership information are requested.

Send inquiries to Secretary-Treasurer, Northland Chapter, American College of Sports Medicine, Gregory L. Seifert, M.D., 675 Water Street, Excelsior, MN 55331.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

AUGUST, 1985

10 **Shoulder Ultrasonography;** University of Minnesota; University Hospital; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455, 612/373-8012

21-23 **Brain Tumors in Children;** University of MN, CME; Radisson University Hotel, Minneapolis; CONTACT: University of MN; Office of CME, Box 293 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455; 612/373-8012.

26-27 **Basic Life Support (CPR) Course Certification/ Recertification;** Methodist Hospital; St. Louis Park, MN; CONTACT: Lisa Collins, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, Minneapolis 55426; 612/932-5189.

27-29 **Advanced Cardiac Life Support Course;** North Memorial Medical Center, CME;'Robbinsdale, MN; CONTACT: G. Patrick Lilja, M.D., 3300 Oakdale North, Robbinsdale, MN 55422; 612/520-5535.

An Expert System Approach to Fluid, Electrolyte, and Acid-Base Balance; Cyberlog, The Quarterly Applied Medical Software (April, 1985); Cardinal Health Systems, Inc; CONTACT: Suzanne Yotti, Director of Marketing, Cardinal Health Systems, Inc., 7562 Market Place Drive, Eden Prairie, MN 55344-3636; 612/941-5170.

28-30 **Autumn Seminar in Obstetrics & Gynecology;** University of Minnesota; Holiday Inn Downtown, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

SEPTEMBER, 1985

4 **Geriatric Endocrinology;** University of Minnesota; Hennepin County Medical Center, Minneapolis; CONTACT: University of MN, Office of CME, Box293 Mayo, 420 Delaware St., S.E., Minneapolis, MN 55455; 612/373-8012.

5-6 **Annual Conference for Nursing Home Med. Directors;** University of Minnesota; Health Sciences Center, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

5 **Update on Lipid Disorders;** University of Minnesota; Willey Hall, West Bank Campus, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

6-7 **Physical & Sexual Abuse of Children;** Minnesota Medical Association, MN Chapter, American Academy of Pediatrics and the Minnesota Academy of Family Physicians; Minneapolis Marriott; CONTACT: Eugenia C. Kassar, MMA, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

7 **Minnesota Society of Anesthesiologists Fall Meeting;** Minnesota Society of Anesthesiologists; L'hotel Sofitel, Minneapolis; CONTACT: P.A. Southorn, M.D., c/o MN Society of Anesthesiologists, 200 1st Street S.W., Rochester, MN 55905; 507/286-8701.

7 **Shoulder Ultrasonography;** University of Minnesota; University Hospital; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

9-20 **Third Annual Grad. Occupational Health & Safety Institute;** School of Public Health & Office of CME; Continuing Education and Extension, University of Minnesota; and Midwest Center for Occupational Health and Safety; Earle Brown Center, University of MN, St. Paul; CONTACT: Ruth K. McIntyre, Director, Continuing Education, Occupational Health, St. Paul-Ramsey Medical Center, St. Paul, MN; 612/221-3992.

10-11 **Management of Alzheimer Patients;** University of Minnesota, Geriatric Research, Education and Clinical Center, VA Medical Center; Willey Hall, West Bank Campus, University of MN; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

12-21 **Advanced Cardiac Life Support (ACLS) Certification/ Recertification;** Methodist Hospital; St. Louis Park, MN; CONTACT: Joan Peterson, RN, Methodist Hospital, 6500 Excelsior Blvd., St. Louis Park, MN 55426; 612/932-5419.

12-13 **Cardiology Update;** Abbott Northwestern Hospital; Holiday Inn, Grand Rapids; CONTACT: Sarah Ventres, Education Dept., Abbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

13-14 **Current Controversies in Adolescent Mental Health;** University of MN; Willey Hall, West Bank Campus, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

14 **Advances in the Control of Infectious Diseases;** University of Minnesota; Radisson University Hotel, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

(September continued)

14 A Workshop in Practical Cardiology; Mayo Clinic/Mayo Foundation; Marriot's Lincolnshire Resort, Lincolnshire, IL; CONTACT: William L Neitz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

17-20 Pediatric Radiology; University of MN; Willey Hall, West Bank Campus, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

18 Lederle Symposium: Stress Management for Health Care Professionals; Minnesota Medical Association & Minnesota State Pharmaceutical Association; Hyatt Regency, Minneapolis; CONTACT: Eugenia C. Kassar, Director CME & Meeting Services, MMA, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

19-21 Trauma and Critical Care Seminar; University of Minnesota & Hennepin County Medical Center; Hennepin County Medical Center, CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

19-21 Pulmonary and TB Update; St. Paul Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K. McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

19-21 Challenge of the Lumbar Spine; Abbott Northwestern Hospital; Amfac Hotel, Minneapolis; CONTACT: Charles Burton, M.D., 2727 Chicago Avenue, Minneapolis, MN 55407; 612/874-4470.

20 Advanced Concepts in Cardiac Pacing; Abbott Northwestern Hospital, Minneapolis Heart Institute; Radisson Metrodome, Minneapolis; CONTACT: Sarah Ventres, Education Dept., Abbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

22-24 Heart Attack Prevention Workshop; University of Minnesota; Wilder Forest Conference Center, Stillwater; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

27 Northwestern Pediatric Society Annual Meeting; Northwestern Pediatric Society; Thunderbird Motel, Bloomington; CONTACT: James G. Cardle, M.D., 7250 France Ave. So., Edina, MN 55435; 612/831-4454.

27-29 Minnesota Society of Neurological Sciences Annual Meeting; Minnesota Society of Neurological Sciences; St. Paul Hotel; CONTACT: David G. Piepgras, M.D., Mayo Clinic, Dept. of Neurosurgery, Rochester, MN 55905; 507/284-3331.

OCTOBER, 1985

2-3 Tenth International Symposium on Intestinal Microecology; University of Minnesota, Mayo Auditorium, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

3-5 Comprehensive Two-Dimensional & Doppler Exam of Co genital Heart Disease; Mayo Clinic/Mayo Foundation; Mayo Clini CONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W Rochester, MN 55905; 507/284-2085.

9-12 Principles of Colon & Rectal Surgery; University of Minn sota; Mayo Auditorium, U of M; CONTACT: University of MN Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapoli MN 55455; 612/373-8012.

11-12 Metabolic Exercise Testing; University of Minnesota; Radisson South Hotel; CONTACT: University of MN, Office of CME Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612 373-8012.

12 Symposium on Psychiatric Issues; Abbott-Northwestern Hospital; Radisson South Hotel; CONTACT: Sally Ventres, Abbott-Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874 4300.

16-18 Internal Medicine Review; University of Minnesota; May Auditorium, U of M; CONTACT: University of MN, Office of CME Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612 373-8012.

17-18 Practical Toxicology: Health Concerns & Legal Issues i the Workplace; St. Paul Ramsey Medical Center; Earle Brow Continuing Education Center, St. Paul; CONTACT: Ruth K McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul MN 55101; 612/221-3980.

18-19 Ophthalmology in Primary Care; University of Minnesota Saint Paul Hotel; CONTACT: University of MN, Office of CME, Bo 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373 8012.

20 Insulin Therapy: An Update; Mayo Clinic/Mayo Foundation Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St S.W., Rochester, MN 55905; 507/284-2085.

20 OB-GYN for Family Physicians; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 20 First St. S.W., Rochester, MN 55905; 507/284-2085.

21-23 Clinical Reviews; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W., Rochester, MN 55905; 507/284-2085.

25 Regional Conference on Angioplasty; Abbott Northwestern Hospital; Minneapolis Plaza Hotel; CONTACT: Sarah Ventres, Education Dept., Abbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

25 E. T. Bell Fall Pathology Symposium: Endocrine Pathology; University of Minnesota; Radisson University Hotel; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

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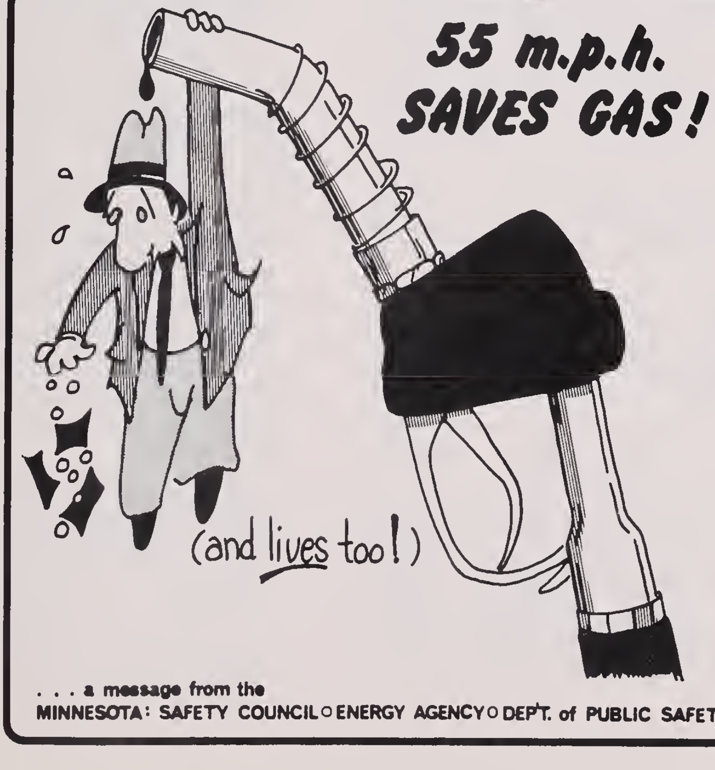
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SUBURBAN F.P. GROUP - SHARE affiliate - seeks associate to service rapid practice growth - competitive salary and benefits - unique opportunity to establish your practice - contact Gloria M. Vierling, Sundance Medical Clinics, LTD., 323 Naumkeag St., P.O. Box 9, Shakopee, MN 55379, (612) 445-6440.

Gastroenterologist or Internist with subspecialty interest in gastroenterology (have all the equipment). Obstetrician/Gynecologist, General Surgeon, Internist, Family Practice in 18 physician multispecialty group located in ideal community of 26,000. Ninety minutes from Twin Cities, excellent schools, etc. The clinic is a modern, well equipped facility providing attractive guarantee and early partnership, plus other excellent benefits. Contact Richard W. Golly, Austin Medical Clinic, P.A., 101 N.W. 14th Street, Austin, MN 55912, (507) 433-7351.

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Psychiatrists needed 12 to 20 hours per week, Monday-Friday between 7:00 a.m. and 5:30 p.m., to assist claims examiners in making disability decisions. Send curriculum vitae to: Disability Determination Services, c/o William T. Ruhl, P. O. Box 64709, St. Paul, MN 55164.

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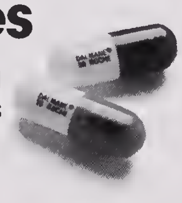

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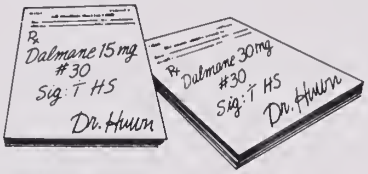

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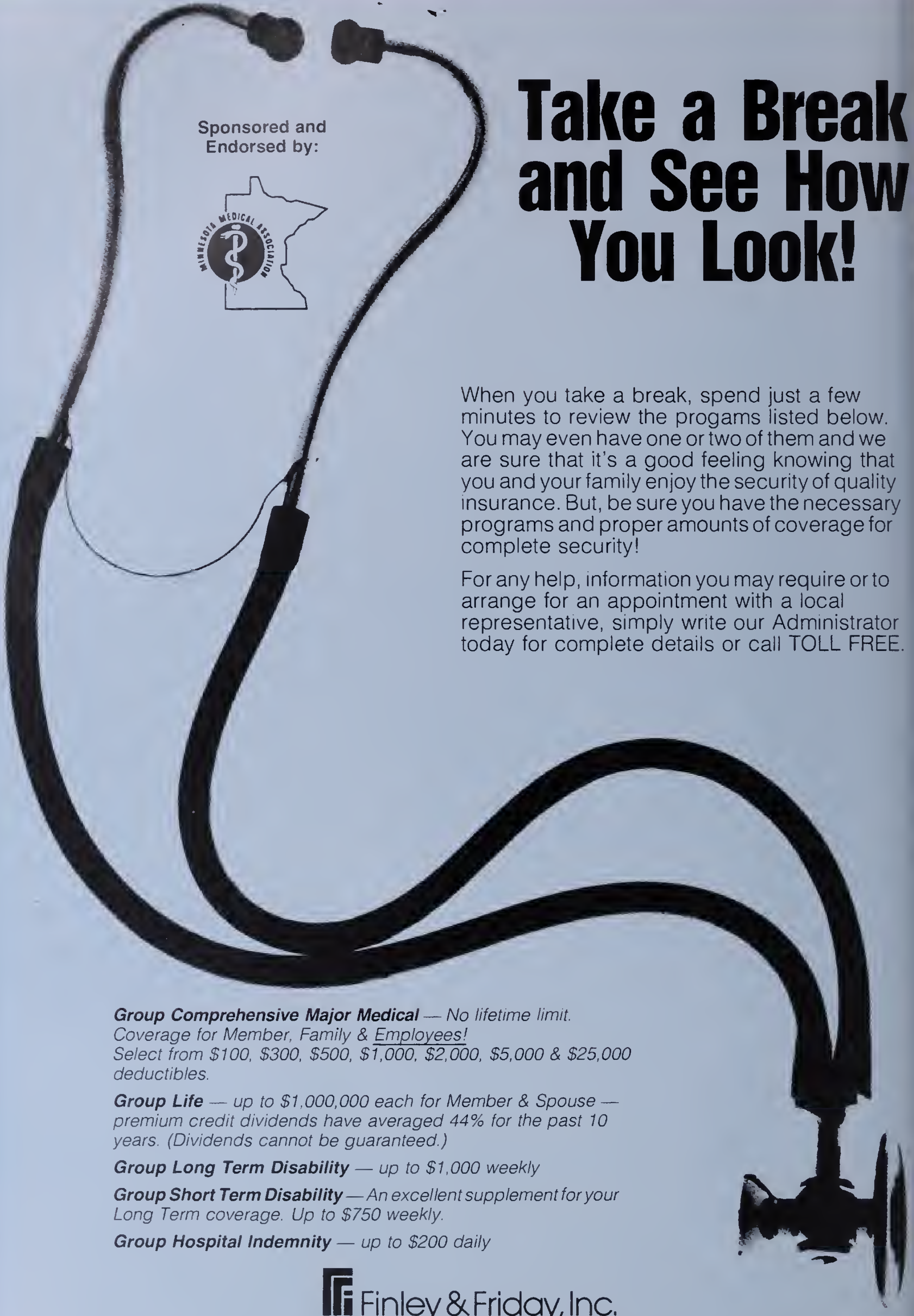

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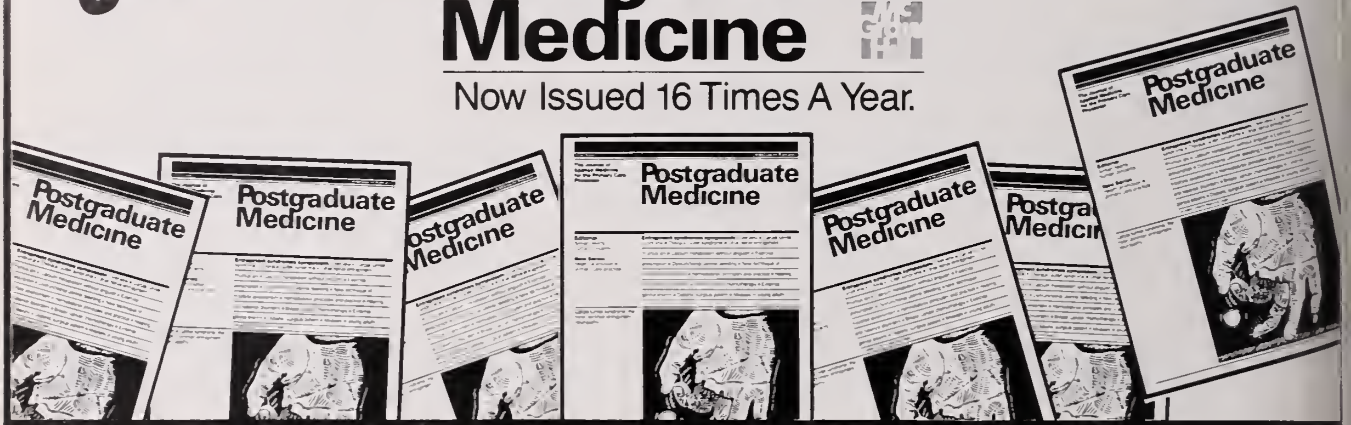

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President's Letter

Professional Liability:
Our Continuing Responsibility

Peggy Craig

M. Elizabeth Craig, M.D.
President
Minnesota Medical Association

While Minnesota's situation has not reached the crisis proportions of other states, I believe it was most prudent to initiate the creation of our own Professional Liability Commission as soon as we did. The Commission was organized this spring and has been meeting regularly since June. Although I have been alerted by many of my colleagues that the problems facing Minnesota physicians regarding professional liability are growing, patient care has not yet been dramatically affected.

The Commission is comprised of many prestigious representatives from business/employers, labor, senior citizens, the judiciary system and legal arena (including both plaintiff and defense attorneys), various health care systems and third party payers. Work began in June and a report should be issued later this fall. Our expectations are that MMA will offer an agenda for action after reviewing the Commission's report.

As your President, I feel the necessity to recognize the support we have received from the vast majority of MMA's members. This Commission, with related activities, has been funded by the $15 assessment which most of you voluntarily paid.

I have great confidence that history will show our small investment not only alleviated the need for more expensive crisis-management but also allowed us the opportunity to tackle a problem before it adversely affected patient care. If our patients remain our primary concern, then this Commission—and your support of it—is a very warranted and valuable endeavor.

However, whatever the Commission's findings and recommendations, physicians will continue to bear a major responsibility for prevention of malpractice claims.

True, many factors beyond physicians' control have pushed the professional liability issue to the brink. The high technology of today's medicine and advances in our drugs and treatment modalities have helped foster our patients' expectations for perfect outcomes. The public's expectations, coupled with a litigious society, has caused professional liability premiums to dramatically increase. This escalation has caused physicians to alter practice patterns and could force future changes which will negatively affect our patients.

The Commission is planning a series of in-depth task force sessions, focusing on three areas. Two of them, civil justice, and public education and involvement, will deal with these issues which are beyond physician control. I am optimistic that the Commission can offer some recommendations which will help to lessen the claim filing. The public *can* be educated as to the cost of filing frivolous suits and the public's understanding of the limitation of medical care *must* become more sophisticated. We may also see the initiation of tort reform, as governmental policy makers grasp the complex issue and the gravity of the present situation.

But the third area of focus for the Commission lands squarely in physicians' laps: risk management and quality assurance. It is becoming increasingly convincing, as the work of the Commission proceeds, that risk management and quality assurance are areas that we can improve to control malpractice costs and problems.

An insurance company report of interest lists the top 10 allegations against physicians in Minnesota in 1984:

- Surgery, post-operative complications;
- Improper treatment, birth related injuries;
- Surgery, inadvertent act;
- Failure to diagnose, cancer;
- Failure to diagnose, pregnancy;
- Failure to diagnose, infection;
- Improper treatment, drug side effect;

- Improper treatment, drug incorrect; and
- Lack of informed consent.

What has also been very apparent is the dramatic need for improved physician-patient communications. Statistics indicate that malpractice claims have their gestation in poor communication between physician and patient; on the risks involved in a surgery or treatment; the possible side effects of a drug; of the limitations of our diagnostic technology and human judgment.The interest and concern of decision makers throughout our state have been captured by the professional liability dilemma, and we may be offered some relief. But responsibility will continue to lie with us to maintain and improve the internal processes we know so well: peer reivew, quality assurance, utilization review, open and candid communication with our patients and thorough documentation of all medical decisions.

We cannot pull the wagons around our camp in hopes of protecting ourselves and expecting the pending professional liability crisis to fade away. Our responsibility on this issue is clear and must be met.

HHS Seeks MMA Members as Medical Advisors

The Department of Health and Human Services is seeking MMA members to serve as medical advisors to assist HHS officials in the Minneapolis and Northern Minnesota, Rochester, Marshall, and Mankato areas in a process of hearing and deciding claims for disability benefits under the Social Security Act.

Administrative Law Judges conduct hearings and request assistance of medical advisors in cases of unusual complexity at the hearings or to answer written interrogatories. All testimony is under oath, but proceedings are informal, and strict rules of evidence are not followed. Remunerations are as set forth by the government guidelines and are commensurate with the services rendered.

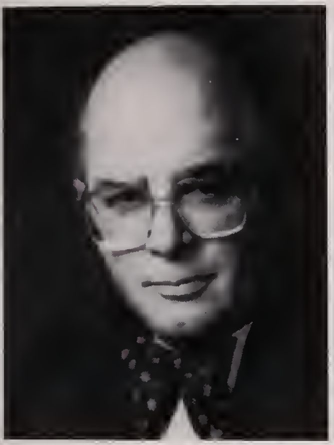
Duties of the medical advisor include the interpretation of clinical and medical records and the providing of expert advice. No personal examination is required.

The administrative law judge will ask for an explanation of medical problems in language understandable to a layman. The judge is seeking impartial, expert advice from the medical advisor. Services of medical advisors are requested on a rotational basis by specialty and availability.

The administrative law judges are particularly in need of board-certified doctors in the areas of neurology, psychiatry, orthopaedics, and internal medicine with subspecialties such as cardiology and respiratory diseases. Inquires are encouraged, or course, from physicians in other specialties.

Kenneth E. Stewart, regional chief administrative law judge, points out that the services "are vital to the impartial adjudication of those case," and also "we wish to insure that these claims receive medical advice from the most expert, impartial and knowledgeable sources."

Physicians interested may write or telephone and discuss the program and its merits with V. Fiereck, Hearing Office Supervisor, Office of Hearings and Appeals, 830 Plymouth Building, Minneapolis, Minnesota 55402, telephone 612 349-3468.



Editor's Notebook

The Corporate Transformation of Medicine in Minnesota
A Letter from London
Twelfth in a Series

Dear MINNESOTA MEDICINE Readers:

When I flew from Minnesota to England to tour gardens, I never dreamed I would be writing another of these series on the "Corporate Transformation of Medicine in Minnesota."

Anyway, this was going to be a pleasure trip—a chance to visit the birthplace of gardening in the Western World. Small wonder gardens root themselves in the English soul and soil. No place in England lies more than 70 miles from the sea. Because of nearness to the sea and favorable ocean currents, plants and flowers here receive just the right doses of moisture and sun.

The Gardener's Prayer

England comes as close as any country to answering the Gardener's Prayer:

> "O Lord, grant that in some way it may rain everyday, say from about midnight until three o'clock in the morning, but you see, it must be gentle and warm so that it can soak in; grant that at the same time it would not rain on campion, alyssum, helianthemum, lavender and the others which you in your infinite wisdom know are drought-loving plants—I will write their names on a bit of paper if you like—and grant that the sun may shine the whole day long, but not everywhere (not, for instance, on spirea or on gentian, plantain lily and rhododendron) and not too much; that there may be plenty of dew and little wind, enough worms, no plant lice and no snails, no mildew, and that once a week thin liquid manure and quano may fall from Heaven. Amen."

Thoughts of Flight

If England is such a greenhouse, and I am such a gardener, why this letter? Well, I could attribute it to my reading on the plane: two books called A PASSION FOR EXCELLENCE (a sequel to A SEARCH FOR EXCELLENCE, and a book which stresses wisdom to be gained by executives by wandering about and talking to employees and consumers, and TWO CHEERS FOR CAPITALISM (a neocapitalism text which says capitalism is messy but more efficient than socialism); and two articles in the JOURNAL of HEALTH AFFAIRS entitled "Death of a Paradigm: The Challenge of Competition" (by Jeff Goldsmith, author of CAN HOSPITALS SURVIVE? and a believer that markets allocate health care better than governments) and "Why Britain's Conservatives Support a Socialist Health Care System" (by Rudolph Klein, a leading British commentator on the National Health Service, who says the NHS is so cost saving and so politically popular that even Conservative British politicians embrace it.)[1-4]

But reading on the plane, or plain reading, did not lead to this letter. Wandering around England and talking about their health system to ordinary folk—pedestrians, shopkeepers, cabbies, chauffeurs, doormen, doctors, dinner guests, and others, had little to do with it. Comparing a capitalistic to a socialistic health care system didn't do it. Touring gardens didn't plant the idea. Lions, not dandelions, made me do it.

Land of Lions

England, you see, is a land of symbolism. As I write these words in a London hotel room, I view through my fourth floor window those symbols of London—two-tiered red buses and tall boxy black cabs—scurrying about below.

But the dominant British symbol is the lion. You see lions, or their mythical cousins, the griffins, on everything: the royal seal, Welsh and Scottish flags, the coat of arms of the city of London, pedestals in front of buildings, and bases of statues. If you have any class or clout in England or want to be seen as a roaring success, you flaunt your lions.

Pride of Lions

Lions symbolize pride. Why else would you call a group of lions a "pride" of lions? And the phrase "lion-hearted" conveys a particularly heart-felt pride. In any event, the leap in my mind was short from lions to American physicians, who were, until recently at least, members of a proud profession. In this letter, I shall focus a bit on pride, control, and influence of physicians in the American health system.

Pride of Physicians

We American physicians are beset, besieged, and bewildered by the transition from a cottage industry of autonomous physicians to a giant $400 billion health care industry beyond our control. Competitive markets have created forces of consolidation and complexity that confound us. Cynics predict American physicians, being poor businessmen and managers, will simply not adjust to their changing environment; that they will be captured by businessmen or become victims of their own managers; and that they genetically or by training do not possess the skills necessary to become health care executives or to manage the affairs of a health care system. The health care business, in short, is too complex to be left to doctors.

Nonsense Talk

This kind of talk is nonsense. Physicians have just as much business sense as anybody else. A physician founded and still leads the Hospital Corporation of American; a physician is Chief Executive Officer of Occidental Petroleum Corporation; and physicians started and still superbly manage medical care clinics and academic medical centers in this country. In the Twin Cities, no one, to my knowledge, has yet accused Doctor Glen Nelson of the Park-Nicollet Clinic of being a poor businessman.

We have been labeled poor businessmen for four basic reasons: (1) most of us have no formal training in the disciplines of management; (2) most of us have been preoccupied with demands of patient care; (3) until recently, most of us practiced in a well-paid profession that carried little business risk and required little business discipline; and (4) we have practiced in a collegial culture wherein all physicians regard themselves as equal professional partners in general management. Some partners have been more equal than others, but we have been reluctant to give authority to our fellow physicians.

Well, as you know, conditions have changed dramatically, particularly in the last three years. But as physicians become part of top-management and as we ascend the learning curve of management skills, I predict you will see a whole new crop of savvy and humane physician executives. Up until now, we have not had physician managers for economic reasons. It has not made sense to use a $100,000 a year physician, untrained in management, to fill a $50,000 position, for which there are many well-trained and capable professional managers. Do not read me wrong. We need non-physician professional managers to do what they do best, but we also need physician executives to help us retain our pride, control, influence, and to define the standards of care.

The Way It Used to Be

Most of you used to be proud to be regarded simply as physicians. For good reasons. You went through a long education grind; you built a practice; you forged close relationships with your patients; you became known in the community through your patients; and you established staff privileges in hospitals where staffs were eager to please you. You controlled the hours you worked; you charged the fees you wanted within limits; and your income reflected how hard you worked. You controlled your destiny.

Personal Satisfaction and Public Admiration

Not only were you satisfied with your work but you felt good about yourself, and the public admired you. You ranked number one in admiration in public opinion polls. Hospital administrators feared and respected you.

Policymakers regarded you as omnipotent. When Medicare and Medicaid passed, politicians accepted fee-for-service as the only choice of payment. You set your rates, and most government people accepted the notion that you could achieve any target income you wanted.

Your Own Person

Most importantly, you could practice your own style. You could decide when to admit, what tests to order, when to discharge, what patients to accept, what fees to charge, how many and what services to offer, how to structure your bills, when to operate, what hospitals to affiliate with, what equipment hospitals should buy, whether you should join a health plan, how the health plan should operate, and you were the cogs, the give and the movers and shakers on Blue Cross and Blue Shield Boards. You were an independent proud professional, and coincidently, an independent proud small businessman.

You were, in summary, your own person. You were in demand because there were not enough of you, and you could pick the specialty of your choice. The world, in short, was your oyster. That society needed and appreciated your services made it all the sweeter. Not only were you proud to be a physician, but society was proud of you.

From Sweet to Sour

But then in the mid-seventies, the sweetness soured, slowly at first, but then with quickening and sickening speed as the next ten years rolled by.

As health care inflation increased at two to three times the rate of the Consumer Price Index, government regulations and third party controls began to limit your autonomy. Your public image began to erode, and your patients began to challenge your authority. Patients and third parties even had the gall to ask for second opinions. Malpractice rates rose. Your paperwork grew. The cost of doing business escalated. In your office, your patient volume dropped by an average of 25 percent. Your income leveled off, and in many instances, dropped.

The Rise of Organizations and the Fall of Individuals

But the final blow to your pride as an independent physician, and as a force in the community, came with growth of power of organizations—third party payers, multispecialty clinics, HMOs, PPOs, alternative delivery systems, business coalitions, government, and even hospitals.

Suddenly you had to ask, even beg, permission from clerks whether to admit a patient, and you were told when to discharge. You began to lose patients. Holes appeared in your appointment lists. It became a grim weekly ritual, the sad chore of signing your patients' charts over to HMOs, who had recruited your patients through marketing campaigns in the media and at their places of employment.

To make matters worse, you learned your possible future patients, the young ones, were seeking alternatives to your office and to your hospital—in competitive health plans, at urgent care centers, at ambulatory surgery units, at birthing centers, and imaging centers.

Patient Behavior Changes

Even the patients themselves changed. Here's how Jeff Goldsmith, a consultant, describes the changes after interviewing hundreds of physicians about patient behavior:

"According to physicians, patients are increasingly vigilant and demanding. They are increasingly suspicious, particularly women. They are increasingly specific about their needs and how they want them met, and increasingly sophisticated regarding medical technology and diagnostic and therapeutic options. When a woman comes to see her doctor about having a baby, she is likely to bring a typed list describing exactly how the experience is to go. Consumer surveys suggest that patients (particularly young ones) are increasingly willing to switch physicians and to shop for physician care on the basis of price."[3]

Increase in Patients' Stake in Their Care

Partly this patient sensitivity about price came about because private health plans between 1982 and 1984 started to limit their economic exposure and to increase the patients' stake in their care. The percentage of plans requiring front-end deductibles for hospital care rose from 30 to 64 percent, for inpatient surgical care from 34 to 59 percent, for deductibles per family of $200 or more from 4 to 21 percent, and for 100% coverage of hospital care from 67 to 42 percent.[3] Employers had given patients a greater economic stake in their care, and patients were acting with increasing independence, with more informed judgment based on better information, and on the basis of price.

From Health Outcome to Economic Outcome

What happened to the good old days? These factors—a glut of doctors, new technology, and perverse physician and hospital economic incentives—caused traditional health care to price itself out of the market. Uncontrolled health care inflation, by 1982 was three times the CPI, jolted Congress into the realization it was paying for more than 40 percent of hospital costs. Doctors and hospitals were not sacrosanct. Congress could impose its own economic terms on doctors and hospitals. The government introduced DRGs, and in so doing altered the entire relationship between hospitals and doctors. Almost simultaneously, businesses and HMOs realized they could call the economic tune for physicians and hospitals, and widespread competitive bidding for physician and hospital services was born. Quality was assumed to be equal no matter what the prestige of the institution or physician, and the "product," e.g. coronary by-pass, went to the lowest bidders. It collectively dawned on people that health care could be managed with an eye on economic outcome, as well as health outcome.

Selling Yourself and Your Practice

Suddenly, as your practice changed, it hit you that the talk about "restructuring health care" and "managed care" didn't only effect others, it centered on you and your future. Quickly you knew you might be in economic jeopardy. You might be compelled to affiliate with an HMO, to become an employee of an HMO, to join with other physicians to reduce expenses and to increase effectiveness, to strike mutually beneficial deals with hospitals, to bid competitively for HMO or hospital work, and to formalize your referral contracts.

You might even have to sell your practice to an HMO or to a hospital. It was no longer good enough to sit around the staffroom or to cross-refer to your friends, or to give talks or to write papers. Somehow you had to join forces in some fashion with an organization. The old ways of practicing and doing business were over, never to return.

The Wisdom of Salomon Brothers, Inc.

Here's how Douglas Sherlock, a vice president of Salomon Brothers, an investment firm, describes what has happened to you:

"Systems of managed care are a bit like public transportation: the demands of the potential users have to be inconvenienced somewhat in order to lower the average cost per user. We tolerate the inconvenience only if the alternative cost is extremely high. If gas costs $1.00 a gallon, we may be unwilling to accept the inconvenience of the bus and would drive to work. If it costs $3.00 per gallon, however, we might prefer to line up at the bus stop. The growth of employee health expenses from 3 percent of corporate profits to 9 percent over the past 12 years has encouraged employees to consider the "public transportation approach" to health care as a cost-effective alternative to the "private care approach." Federal and state health care reimbursement programs are, as you know, reaching similar conclusions."[5]

Systems of Managed Care

And so, for economic reasons, corporations, government, and private health plans are seeking "managed" systems of care. One form of these systems is, of course, the HMO, which from 1982 to 1985 has grown by annual rates of 5.5 percent, 15.3 percent, 21.4 percent, and at least 22 percent this year. Others include the federal DRG program, PPOs, and private insurance plans with aggressive utilization controls. Profit-seeking hospital chains are adding their own managed systems, often with their own private insurance. Add to these developing systems the realities that autonomous physicians in solo practice are rapidly evolving into complex referral relationships and into group practices, and you begin to realize that all of us physicians will, sooner or later in one way or another, practice within a large system. This may be a loose affiliation at first, but it will invariably grow tighter with time.

A Triple Bind

As you work within organizations you will find yourself in a triple bind: (1) you must consider many constituents—the patient, the group, their specialty peers, nurses, technicians, and administrators; (2) the bureaucracy provides a shelter against uncertainties, but it limits your expectations of autonomy and authority, the two main reasons most older physicians went into medicine in the first place; (3) the more time you spend trying to influence organizational decisions—by networking with peers, by gathering information, by negotiating, or by building a case for a decision—the less time you can spend practicing medicine.

Loss of Personal Leverage

Under the traditional system, when physicians were scarce, hospital beds filled, and resources allocated on a fee and cost basis, you had leverage. You could create the environment in which you wanted to practice. But if you work in an organization with a capped budget and fixed allocation of resources, you have little individual leverage.

The Permanente View

The Permanente Medical Group sees the problems of a physician working within a bureaucracy this way:

"In the current environment, with its emphasis on coordination of services and control of resources, the central role of the physician has been fragmented. Influence thus is a process of building a critical mass of support for changes and programs—of building a case and gathering support. The influence of a physician depends on the network of contacts and time spent forging ideas which are acceptable to the group. It is a multiconstituency process, since many decisions and programs impact many other interest groups, including nurses, technicians, patients, and administrators. Thus, the skills of influence include the ability to build bridges between people and to negotiate viewpoints and preferences."[6]

Self-Governance

How do you keep your professional pride in the organization setting? One way surely is to be self-governing. When you travel around, as I do, witnessing the workings of health care organizations, you will find professional pride remains extant in those organizations in which physicians set their own professional standards, decide among themselves how to allocate time and income, and run what they perceive to be important to physicians. This, by and large, is the case at the Mayo Clinic, in the Permanente Medical Groups, and even among British hospital consultants working for the National Health Service. Indeed, this is what Rudolph Klein has to say about British hospital consultants: "British hospital doctors enjoy a larger degree of clinical autonomy than their American counterparts. While they are constrained by fixed budgets, they enjoy virtually total freedom with them with no review system or medical audits or challenges in their practices."[7]

Forecasting

From the foregoing, do not conclude that I think superclinics like Mayo, or huge prepaid plans like Kaiser, and certainly plans like the National Health Service are perfect examples for physician autonomy or represent the wave of the future. I am simply saying self-governance for physicians in any organization is a good thing. Unite, and you will be happier and more effective. I predict the fastest growing segments of the HMO markets will be physician-governed, or if you prefer, physician-controlled. HMOs set up by multispecialty clinics are ripe for expansion because physicians in those clinics are self-governing and perceive themselves to be in command.

Among eminent health care forecasters, particularly Paul Ellwood, there is the belief that 10 to 15 "supermeds"—such as Kaiser, or Mayo, or Medcenters of American, or Prudential—will dominate the American health system by about 1990.

I remain dubious, but I have been wrong before. In the first place, giant corporations are already losing their competitive grip on America because their products don't meet the expectations of specialized customers. Second, small firms have supplied most of America's 40 million new jobs since 1970, while the Fortune 500 companies have lost five or six million jobs. It may be that giant firms will integrate the functions of medical care and insurance, but there will be room for regional firms, too.

The Entrepreneurial Transformation

Besides, most of the innovation in the American economy is occurring with smaller firms—not giant corporations. What we may well witness is an entrepreneurial rather than a corporate transformation of medicine. While the relative status of physicians may be declining, the health care industry is booming. Many physicians, because they understand medical care, will become central figures who will create organizations to capture niches in the new health care system.

The English System

Lastly, if the National Health Service is the model for American national health service, I would rather not see that happen. As you travel through England, talking to ordinary folk, you sense a moralistic fatalism about the National Health Service that goes like this:

"Of course, for reasons of fairness and equity, we have to have the NHS. Yes, it is inefficient. And yes, it has too many bureaucrats and too few services. Yes, it rations health care and may turn people away to die. Yes, it makes you queue up for care. And yes, its buildings and hospitals are depressing, old, and run-down." But it is fair. Nobody should be denied care because they don't have cash. Illness and disease are inevitable. After all, disease and death are the final common levelers, and should therefore be controlled by the government."

Stagnation and Decay

As admirable and egalitarian as these attitudes may be, they have produced a stagnant health system with a decaying infrastructure. More than 90 percent of the hospitals here were built before 1940 with private money, and two-thirds of them date to 1890 or before. With one million employees, the National Health Service ranks as the single largest bureaucracy in Western Europe. The service employs 52,000 physicians in its hospitals at a cost of 900 million pounds, or roughly $25,000 for each doctor.[5]

All is not well with the NHS. Its hospitals are antiquated; its physicians constantly complain about its inadequacies; large numbers of its physician elite flee England's shores for better opportunities; its policies force 3/4 million British citizens to queue up for elective surgery; budget policies force physicians to deny services to those who will die without them.

The System Works Politically

But politically, the system works superbly. Here is Rudolph Klein's explanation of why it works:

"The NHS symbolizes in British eyes social equity and collectivist compassion . . . a health system which manages to be parsimonious and popular, and which makes the rationing of health care socially acceptable . . . the NHS is essentially a national health maintenance organization (HMO) working within a fixed budget . . . next to the monarchy, the NHS is Britain's most popular institution. With remarkable consistency throughout the history of the NHS, some 90 percent of the population have, when asked in public opinion surveys, declared themselves satisfied with the NHS."[4]

The American System

Unlike the British system, which is geared to general practitioners serving as gatekeepers and hospital specialists with no financial incentives to provide more care, the American system is increasingly driven by consumers, and the organizations that serve the consumer.

Organizing to Serve Consumers

How can unaligned physicians organize to serve consumers? Well, first of all, it is clear American physicians are going to have to either form or join some syste with enough critical mass to raise capital, to put together a management team, and t take their products to market. This may be an HMO, or another competitive pla but it may be a hospital, too.

Forming Partnerships with Hospitals

What I am suggesting is this: most physicians have long-term relationships wit hospitals. That is where their strength and influence lie, and that is where physiciar have leverage. Why not form partnerships with them? After all, hospitals nee patients, and either you or a health plan has to supply them. The individu physician's, or your group's contribution, to the hospital census may be critical to i survival. And the hospital's critical mass of management skills may help you capitaliz your practice or ideas, to put a management team to work on them, and to marke them. But be realistic. Keep in mind that your hospital may soon be part of a large system, and will not survive through patient-hospital partnerships alone.

Innovation at the Grass-Roots

In any event, through your local hospital and its system, you are more likely t be able to innovate at the grass-roots, to keep your identity and pride, to hav influence on the small "wins" in a competitive environment, to introduce your ow ideas and fantasies about what consumers really want, to participate in the strategi planning of an organization close to you, and to contribute as an individual to you own success and to that of your hospital. Best of all, you can be proud of yourself fo participating and shaping your own destiny.

Next time, when I have more time, I'll write a shorter letter.

Your Wondering Edito

Richard L Reece

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Pyloric Stenosis
Revisited in St. Paul

HOWARD STANG, M.D.*

A retrospective chart review of infants with pyloric stenosis (PS) uncovered 122 cases at St. Paul Children's Hospital from 1979-1983. As reported in the literature, there was a male predominance with a bias toward primogeniture. The caesarian section rate was consistent with the national and local average. Fifteen percent of the cases had a positive family history. Eighty-eight and one-half percent of all infants in the series underwent an UGI x-ray study before surgery, many of which probably could have been avoided if referred first to the pediatric surgeon.

Pyloric stenosis (PS) is the most common abdominal surgery performed in early infancy.[1] The national incidence has been reported to be one in 300-500 live births.

The present study was undertaken to investigate associated factors with PS, and the current use of the clinical exam versus barium contrast to make the diagnosis.

Methods and Results

The study was a retrospective chart review of all infants undergoing pyloromyotomy for PS at St. Paul Children's Hospital between January, 1979 and December, 1983.

Information was obtained from nursing and physician histories, thus representing an element of possible underreporting. All patients were evaluated and operated on by the same two pediatric surgeons.

There were a total of 122 cases of PS over the 60 month study period (Table). There was a definite male predominance with 82% male and 18% female.

Seventy percent of all the male cases were first born males, and 30% were the second, third, or fourth males born to the family. This represents 57% of all patients being first born males.

The average age at diagnosis was 38.4 days. Forty-eight percent of the babies were breastfed, and 52% were formula fed at time of onset of symptoms.

Sixteen percent of the babies were delivered by caesarian section.

A first-degree relative (defined as a sibling, parent, first cousin, uncle, aunt, or grandparent) had been treated for PS in 15.5% of the 122 cases.

One hundred and eight or 88.5% of the series underwent an upper gastrointestinal barium contrast study.

Surgical mortality was zero, and the only surgical complication was chemical peritonitis and pneumoperitoneum secondary to a pyloric mucosal tear. This required a second procedure, but a complete repair and recovery was easily accomplished.

Comment and Discussion

This series of 122 patients is consistent with previously reported statistics. The literature reports a male to female ratio of 4:1[3], and this series was 4.6:1. There was a predominant first born male incidence as reported in the surgical literature.[3]

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TABLE
Pyloric Stenosis Associations

Year	Cases (n)	Male to Female Ratio	First Born Males	Breast: Bottle Fed	UGI done	C-section	Positive Family History
1979	16	15:1	11	7:9	11	4	1
1980	30	24:6	16	17:13	30	3	2
1981	32	26:6	18	16:16	27	7	3
1982	15	14:1	10	9:6	12	1	3
1983	29	21:8	15	10:19	28	5	10
Total:	122	100:22 (4.6:1)	70 (57%)	59:63 (6.6:7)	108 (88.5%)	20 (16%)	19 (15.5%)

Approximately one-half of the infants were bottle fed. The current rate of bottle feeding at two months of age is 59%.[4]

The C-section rate in this series (16%) was not statistically different from the local or national averages (17%).[5]

Fifteen percent of the infants had a first degree relative with the same diagnosis. There was one set of twins who developed PS on the same day with a positive family history in an aunt. One girl's father and older brother had PS, and there was one boy whose paternal uncle and two paternal cousins were similarly affected. Other studies report a familial incidence of approximately 15% with a polygenic inheritance pattern.[6]

Palpation of a pyloric tumor has been reported to vary from 68-97%.[3,7] A barium upper GI study is primarily indicated in patients on whom PS is suspected, but who have no palpable pyloric tumor.[1,3] The younger the infant and the fewer the days since the onset of vomiting make palpation of the olive more difficult, as the hypertrophy may not have progressed to the point of being palpable. In this series, 88.5% underwent an UGI. Such Xrays were usually ordered by the admitting pediatrician or pediatric resident due to the uncertainty of the physical findings. In patients on whom the pediatric surgeon did the examination before any Xray was performed, such Xrays were not needed.

Plain abdominal Xrays are rarely helpful. Recent literature has cited the use of ultrasound as an aid in the diagnosis without the use of radiation.[8]

Conclusions

This series confirms a previously reported male predominance with a bias toward primogeniture. The type of delivery and feeding method did not differ from the norm. A positive family history was elicited in 15.5% of the cases. UGI studies could have been avoided for many patients if they had first been referred to a pediatric surgeon.

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eferences:

Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.

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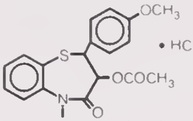
DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+)-cis-. The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1. asthenia (1.2%), AV block (1.1%). In addition, the following ev were reported infrequently (less than 1%) with the order of prese tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, brady dia, palpitations, congestive heart fail syncope.
Nervous System:	Paresthesia, nervousness, somnoler tremor, insomnia, hallucinations, and amne
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vomit mild elevations of alkaline phosphatase, S SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensiti
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episodes vasospastic angina developed periods of transient asymptom asystole approximately five hours after receiving a single 60 dose of CARDIZEM.

The following postmarketing events have been reported in quently in patients receiving CARDIZEM: erythema multiforme; kopenia; and extreme elevations of alkaline phosphatase, SG SGPT, LDH, and CPK. However, a definitive cause and effect betw these events and CARDIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been limit Single oral doses of 300 mg of CARDIZEM have been well tolera by healthy volunteers. In the event of overdosage or exaggera response, appropriate supportive measures should be employed addition to gastric lavage. The following measures may be consider

Bradycardia	Administer atropine (0.60 to 1.0 mg). If th is no response to vagal blockade, adminis isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed hi degree AV block should be treated with c diac pacing.
Cardiac Failure	Administer inotropic agents (isoproteren dopamine, or dobutamine) and diuretics
Hypotension	Vasopressors (eg, dopamine or levarteren bitartrate).

Actual treatment and dosage should depend on the severity of t clinical situation and the judgment and experience of the treati physician.

The oral/LD_{50}'s in mice and rats range from 415 to 740 mg/ and from 560 to 810 mg/kg, respectively. The intravenous LD_{50}'s these species were 60 and 38 mg/kg, respectively. The oral LD_{50} dogs is considered to be in excess of 50 mg/kg, while lethality w seen in monkeys at 360 mg/kg. The toxic dose in man is not know but blood levels in excess of 800 ng/ml have not been associat with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic Coronary Artery Disease or Angina Pectoris at Rest Due to Coronary Artery Spasm. Dosage must be adjusted to each patient needs. Starting with 30 mg four times daily, before meals and bedtime, dosage should be increased gradually (given in divide doses three or four times daily) at one- to two-day intervals unt optimum response is obtained. Although individual patients ma respond to any dosage level, the average optimum dosage rang appears to be 180 to 240 mg/day. There are no available data concer ing dosage requirements in patients with impaired renal or hepat function. If the drug must be used in such patients, titration should b carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort acut anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy** — CARDIZEM may be safel coadministered with short- and long-acting nitrates, but ther have been no controlled studies to evaluate the antiangin effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (ND 0088-1771-47) and in Unit Dose Identification Paks of 100 (ND 0088-1771-49). Each green tablet is engraved with MARION on on side and 1771 engraved on the other. CARDIZEM 60-mg score tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Un Dose Identification Paks of 100 (NDC 0088-1772-49). Each yello tablet is engraved with MARION on one side and 1772 on the othe

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Effect of the Acquired Immune Deficiency Syndrome (AIDS) on Blood Transfusion and Donation Patterns in the State of Minnesota

EDWARD P. SCOTT, M.D.*, DAVID J. THERKELSEN†
and JON M. SIESS**

During 1983, when considerable attention was directed toward the Acquired Immune Deficiency Syndrome, blood transfusion and donation rates were below projected rates within the 99-county region served by the St. Paul Red Cross Blood Center. In order to determine if there was a relationship between these two phenomena, surveys were undertaken of physicians, blood donors, and the general public. Results of these surveys are presented and discussed.

During 1983 the Acquired Immune Deficiency Syndrome (AIDS) was the subject of considerable attention in both the medical and lay press.[1-6] While it was not then firmly established that AIDS could be caused by blood usage, the two phenomena were often associated.[4,5] Also during this time, the St. Paul Red Cross Blood Region, consisting of 99 counties in Minnesota, Iowa, North Dakota, South Dakota, and Wisconsin, experienced a period of blood transfusions below projected rates and blood collections below expected rates. The reasons for the declines have not been clearly defined.

In an attempt to ascertain whether concern over contracting AIDS was related to this decrease in transfusion rates or donation rates, three research projects were undertaken. The first was a telephone survey of a random sample of 1,000 Minnesota adults. The second was a telephone survey of present and past blood donors in the region served by the St. Paul Red Cross Blood Center. The third was a mail survey of physicians in Minnesota. Results of those surveys are reported.

Methods

Survey instruments were drafted by a local research firm (Mid-Continent Research, Inc., St. Paul, Minnesota). The instruments for the nonphysicians' surveys were approved by the St. Paul Red Cross. The survey instrument for the physicians' survey was approved jointly by the St. Paul Red Cross and Minnesota Medical Association (MMA).

Survey of Minnesota Adults

Mid-Continent Research conducts a PROBE survey four times annually of 1,000 Minnesota adults (18 years or older) selected at random from appropriate telephone directories. St. Paul Red Cross contracted with this firm to have a series of questions included which would attempt to gauge the general public's awareness of AIDS and its perception of the transmissibility of AIDS by blood donation or blood transfusion.

The survey was performed by telephone interviews which were conducted between October 27 and November 16, 1983. Trained and supervised interviewers contacted individuals within each selected household under a random selection method that distributes age and sex characteristics in proportion to the population.

Survey of Blood Donors

Surveys were performed within two distinct donor groups in order to judge the awareness of AIDS among persons who were current or past blood donors and to attempt to relate perceptions of this disease to blood donation patterns. Present donors were defined as individuals who had donated blood through the St. Paul Red Cross during 1983. Past donors were defined as individuals who had donated blood through St. Paul Red Cross at least twice during 1982, but had not donated in 1983. These definitions were chosen because of their applicability to the general hypothesis that fear of contracting AIDS by donating blood has caused people to discontinue donating. If true, the expected pattern would be individuals who have regularly donated previously (thus the requirement for two or more donations in 1982) ceasing to do so in 1983, the period of intense media attention to AIDS. From computer lists maintained by St.

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Paul Red Cross, a random sample of 100 individuals in each category was selected. Trained and supervised interviewers conducted telephone interviews October 18 and 19, 1983, with 50 of the 100 prospective subjects in each category, using a random selection method of determining interview subjects.

Survey of Physicians

Surveys were performed among the medical community of the State of Minnesota in an attempt to gauge the degree to which patients were expressing concern about the possible acquisition of AIDS by a blood transfusion and the extent to which physicians had altered their methods of blood utilization as a result of AIDS. A random sample of 500 physicians was selected from MMA lists of members who classify themselves as pediatricians, family practitioners, surgeons, hematologists/oncologists and internal medicine practitioners. This subgroup of physicians was selected because of their likelihood of caring for patients with a need for blood transfusion. The survey was mailed on October 19, 1983, with postage-paid reply envelopes. Some 270 completed surveys, or 54 percent of those mailed, were returned by November 18, 1983.

Results

Probe Survey

Ninety-five percent of the adults surveyed had an awareness of AIDS (Table 1). Those who were aware of AIDS were also generally aware of the groups felt to be at highest risk of contracting the disease, specifically homosexuals, intravenous drug users, Haitians, and hemophiliacs. When questioned concerning the link of blood transfusion and the acquisition of AIDS, 73 percent of those who had heard about AIDS felt that it could be contracted from receiving blood, but in general the

TABLE 1

Non-Physicians Surveys

		Donors		
	PROBE	Total	Past	Present
1. Aware of AIDS				
Yes	95	95	96	94
No	4			4
Unsure				2
2. Is there a risk of acquiring AIDS from a blood transfusion?*				
Yes	73	70	68	77
No	9	9	16	2
Unsure	17	18	16	21
3. Does blood from a blood bank or from a friend/relative carry a greater risk of transmitting AIDS?**				
Blood bank greater risk than friend/relative	70	67	73	62
Blood bank same risk as friend/relative	15	15	12	18
Blood bank less risk than friend/relative	8	9	3	15
No answer/unsure	4	8	12	5
4. Is there a risk of acquiring AIDS from a blood donation?*				
Yes	9	12	4	21
No	69	73	92	57
Unsure	21	12	4	21
5. Does your awareness of AIDS affect the likelihood of your donating blood to a blood bank in the future?*				
Less likely to donate	8	-	-	4
No effect	81	-	100	84
More likely to donate	4	-	-	8
No answer/unsure	6	-	-	4

---

*Asked of those aware of AIDS.

**Asked of those who felt there was a risk of acquiring AIDS from a blood transfusion.

Results of telephone interviews of 1,000 Minnesota adults (PROBE), 50 former blood donors and 50 current blood donors. Results are in percent. For each question at a 95% confidence interval, a response can be considered accurate within +2% and +8% for the PROBE and donor surveys, respectively, with the reported figure the most probable true value.

feeling of those surveyed was that the risk was not large. However, there was felt to be a greater risk of acquiring AIDS from blood collected from the general population than from blood which could be identified as coming from a friend or relative. Of those who had heard of AIDS, nine percent felt that it would be possible to acquire the disease by donating blood and 21 percent were unsure if it would be possible to acquire the disease in this manner. Eight percent of the respondents felt that the potential association of AIDS and blood donation would make it less likely that they would donate blood to a blood bank. When this subgroup of respondents was questioned further, 73 percent of them stated that they would be more likely to donate blood for a friend or relative than for someone they did not know. One fourth of the survey population had donated blood within the last two years.

Present and Past Blood Donors

Results of the surveys carried out in the donor groups revealed very similar findings to those of the PROBE survey (Table 1). The results from the two donor groups will be discussed together. Ninety-five percent of the donors were aware of AIDS, similar to the percentage in the general population survey. Seventy percent of those aware of AIDS felt that it could be contracted by receiving a blood transfusion. Approximately 70 percent of those donors felt that blood from the general population had a higher risk of transmitting AIDS than blood from a friend or relative. Twenty-one percent of the present donors and only four percent of past donors felt that there was a risk of acquiring AIDS during the process of blood donation. Fifty-seven percent of present donors and 92 percent of past donors correctly believe this is not possible. Only four percent of present donors felt that they

TABLE 2

Physicians Survey

1. In your opinion, what is the *actual* risk of acquiring AIDS from a blood transfusion?	
None	8
Less than 1%	83
Less than 5%	6
5 - 25%	1
Don't know/no answer	2
2. What proportion of your patients are expressing fear of contracting AIDS from a blood transfusion?	
None	56
Less than 5%	31
5 - 25%	9
25% or more	3
Don't know/no answer	1
3. If a patient does express fear of getting AIDS, what do you advise?	
There is no risk	8
Risk outweighed by need for transfusion	74
Delay surgery until more is known	0
Arrange directed donation	12
Arrange autologous donation	3
Other	2
Don't know/no answer	8
4. What policy for directed blood donations is reasonable for blood banks to establish?	
Not a good idea	10
Acceptable if patient insists but not necessary	61
Directed donations best until more is known	26
Provide for autologous donation	3
Other	2
Don't know/no answer	2
5. Specialty	
Pediatrician	7
Family practitioner	33
Surgeon	26
Hematologist/oncologist	2
Internal medicine	27
Other	6

Results of 270 responses to a mail survey of a random sample of 500 practicing physicians in the State of Minnesota. Responses are in percent. For each question at a 95% confidence interval, the response can be considered accurate within +6%, with the reported figure the most probable true value.

would be less likely to donate blood in the future due to their understanding of AIDS. A majority of those defined as past donors do not consider that they have "dropped out," out of concern about AIDS or for any other reason. An inspection of individual responses for the 40 percent of past donors who agree that they have not donated in 1983 reveals that the reason for their current nonparticipation usually concerns convenience or opportunity. In no instance was AIDS stated as a cause not to donate.

Physicians

Physicians surveyed overwhelmingly felt that the risk of acquiring AIDS from transfusion was less than one percent (Table 2). Eighty-seven percent of the physicians surveyed reported that five percent or less of their patients were expressing fears of contracting AIDS from a blood transfusion. For those patients who were expressing concern, most physicians were offering reassurance that the benefits of transfusion were greater than the potential risk of acquiring AIDS. However, 15 percent of the physicians were suggesting that their patients arrange to receive blood from sources other than the general public. These physicians were encouraging their patients to either make autologous donations of blood for their potential use during surgery or to have specific donors identified to support them with blood transfusion products as needed (directed donations).

Physicians were asked their feelings concerning the need for blood banks to provide directed donations from friends or relatives for patients who required blood transfusions. Sixty-one percent of the physicians felt that directed donations were acceptable, but not essential, if the patient insisted on receiving blood collected in this manner. Twenty-six percent felt that provision for directed donations was the most appropriate policy for blood banks to pursue until more was known about the potential link of AIDS to blood transfusion. The majority of the respondents felt that blood banks were doing a good or a very good job of taking precautions to prevent the spread of AIDS; however, a third of the physicians had no opinion on this question. A third of the physicians responding classified themselves as family practitioners and approximately one quarter classified themselves as surgeons or internists. Responses from physicians within each of these specialties were essentially identical to those of the entire survey group. One third of the physicians listed their practice area as Hennepin County and 20 percent were in the metropolitan area of St. Paul. Four percent were practicing in Olmsted County and the remainder in other areas of the state.

Discussion

Awareness of AIDS is very high among Minnesota adults. This is in agreement with a nationwide survey taken by the Roper Organization which showed that 91 percent of 2,000 adults surveyed were aware of AIDS.[7] Seven out of ten of those surveyed felt that AIDS may be acquired with blood transfusions, but most felt the risk of acquiring the disease was not large. The risk of acquiring the condition was felt to be higher if the transfused blood was collected from an anonymous donor than from a friend or relative. This perception has led to a demand for blood banks to provide directed donations from friends or relatives for specific patients requiring blood transfusions. This policy has been resisted by the major blood banking organizations: the American National Red Cross, the American Association of Blood Banks, and the Council of Community Blood Centers. A joint statement issued by these organizations stated, "There is no evidence to support this notion that these 'directed donations' are safer than those available through the community blood bank."[1]

The position of the blood banking organizations is that the donors who would be selected for directed donations are the same volunteer donors who have given in the past to support the community. In addition, there is a fear that a system of directed donations may create intense pressure on family and friends, who may therefore be untruthful about their health histories in order to maintain confidentiality of personal information. This pressure may cause them to put themselves or the potential recipient at unnecessary risk. Also, there is a concern that donors may refrain from routine blood donations while awaiting a request to provide directed donations, and thereby could disrupt the blood supply to the point that emergency, and even some routine needs for transfusion, may go unmet.[1]

From recent reports[8,9] it appears that AIDS is caused by the HTLV-III virus. However, there is currently no screening laboratory test to identify those individuals whose blood may transmit the disease. In the absence of such a test, blood banks have developed screening procedures to defer potential donors from high-risk groups for acquiring AIDS.[10] In almost every instance of reported transfusion-associated AIDS, blood donation occurred prior to the institution of these screening procedures in March of 1983.[11]

The fear of acquisition of AIDS does not appear to be a reason for donors ceasing to donate. However, 21 percent of present donors did feel that AIDS could be acquired from a blood donation. This is in contrast to four percent of the past donors who felt this to be true. The feelings of the present donors is in agreement with the findings of the Roper poll.[7] It is unclear why there is a discrepancy between the understanding of the safety of blood donation between these two groups. One hypothesis is that the exposure at the time of donation to printed material which discusses AIDS may cause an association between the two phenomena in the mind of the donor. It may be necessary to modify some of these materials in order to clarify the safety of blood donations and the lack of transmissibility of AIDS by donating.

The factors causing the drop in blood donation rates in 1983 remain unclear. Blood donation rates have now returned to forecast patterns within the St. Paul region; however, blood transfusion rates remain lower than projected. Although the factors associated with the deceased blood utilization are not clearly defined, the role of AIDS does not appear to be very great.

Addendum

Since the submission of this manuscript, major advances have been made in the understanding of the etiology and transmissibility of AIDS. The association of HTLV-III and AIDS has been clarified, and the role of blood transfusion in the spread of the disease has been documented. Concurrently, new measures have been introduced to further reduce the risk of acquiring AIDS from transfusion. Since May 1, 1985, all blood products collected through the St. Paul Red Cross Blood Center have been tested for the presence of HTLV-III antibody and discarded if found to have a reactive test. These additional steps should further enhance the safety of the blood supply in this region. It remains to be seen whether the medical and lay public's impressions concerning AIDS and blood donation or transfusion will be affected by these factors.

Acknowledgment

We are indebted to the members of the Public Health Committee of the Minnesota Medical Association for their assistance in performing the physicians' surveys. We also express our appreciation to Pat Derks, word processing supervisor, St. Paul Red Cross, for manuscript assistance.

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MMIE Insurance Rate

Effective October 1, 1985, the annual MMIE renewal date, insurance rates will increase by an average of 28% to 31% for most MMIE policyholders. The rate increases are similar to adjustments being made throughout the casualty insurance industry for professional liability. MMIE's competition will raise its rates 25% to 30% for most physicians and by 70% for family practice physicians rated for obstetrics, according to reliable sources.

MMIE also has increased rates for family practice physicians rated for obstetrics. However, the increase has been phased in over two years (beginning in 1984) for a total increase of 49% to 65%. These substantial rate increases reflect losses both statewide and nationally for this specialty.

MMIE's actuaries recommended the rate increases after analyzing MMIE's loss experience, the loss experience of MMIE's competitors and loss history nationwide for medical malpractice coverage. Also considered in the new rates were the increasing number of large verdict awards and the rising cost of reinsurance.

The Problem with Lead

RAYMOND W. THRON, Ph.D.*

In a 1984 report to the state legislature on the effects of lead exposure on, children, the Minnesota Department of Health issued these major findings:

1. Though childhood lead toxicity is still a problem in the United States, it is on the decline. As leaded gas use has declined, so has the incidence of elevated blood lead levels in children. Screening programs in the Minneapolis/St. Paul area indicate that children in the metro area have blood lead levels lower than the national average. Many children with elevated blood lead levels show no signs of lead toxicity.

2. Children have environmental lead exposures from more than one source, including lead-based paint, leaded gas, soils in urban areas (in some places up to 1,000 ppm) and industrial areas (as high as 100,000 ppm), food and contaminated water.

3. The blood lead levels in children are influenced by personal, social and nutritional factors, by parental supervision and by mouthing activities.

4. The toxicity of lead is well documented. We are, however, unsure about the neurological problems associated with low lead exposure.

5. Children are at higher risk than adults; they require more food, water, and air in relation to body weight. Adults absorb 10 percent of ingested lead, whereas children absorb 50 percent. Nutritional deficiencies, more common in children, cause increased lead adsorption and decreased lead excretion.

Based upon these findings, the Health Department made the following recommendations:

1. Lead exposure should be decreased through such regulations as stricter housing codes and decreased use of leaded gasoline.

2. More thorough reporting of disease.

3. Increased child screening programs should be closely coordinated with nutritional programs and increased use of the EP (erythrocyte protoporphyrin) screening test.

4. Broader public education programs on ways to prevent lead exposure.

---

*Director, Division of Environmental Health, Minnesota Department of Health, Minneapolis, Minnesota.

Health Effects of Lead in the Environment. Conference held May 21, 1985. Printed by permission of Freshwater Society, Navarre, Minnesota.

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INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris. All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin.

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks. Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis.

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established. If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension.

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE. The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg. below 90 mmHg). Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy.

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary.

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur. Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory. The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined. However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals. On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months.

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers. In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal. The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known. However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly.

Information for Patients: Headache may occur during initial therapy with SORBITRATE. Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use.

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates.

Isosorbide dinitrate acts directly on vascular smooth muscle; therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug. A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet.

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose. There are no adequate and well-controlled studies in pregnant women. SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established.

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related. In clinical trials at various doses, the following have been observed.

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent. Cutaneous vasodilation with flushing may occur. Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose. Drug rash and/or exfoliative dermatitis may occasionally occur. Nausea and vomiting appear to be uncommon. Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates. The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg.

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose. In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure.

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours. Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported.

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended. The extent to which development of tolerance should modify the dosage program has not been defined. *The oral controlled-release forms of isosorbide dinitrate should not be chewed.*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg); Chewable Tablets (5, 10 mg); Oral Tablets (5, 10, 20, 30, 40 mg); Sustained Action Tablets (40 mg).

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Lessons from the Episcopal Choir Master

PAUL G. GANNON, M.D.*

The first thing you noticed about Jack Grant was his intensity. My first encounter with him was during a talk I gave on pacemakers at St. Michael's Hospital in Sauk Centre. He was director of the coronary unit and had been faced occasionally with patients needing pacemakers for life threatening arrhythmias. The nearest cardiologist was 120 miles away. Jack was a family practitioner. The year was 1969. He felt an obligation. I offered to teach him how. The next time I put in a pacemaker, Jack drove down, got the hang of it and after that was able to meet these occasional emergencies with the necessary tools and knowledge.

"I'm sending down Emil Wiener. He has fierce angina. I put him on beta and calcium blockers, nitrates and still he is in big trouble. Get Arnie to study him, but I know he needs an operation. You call and tell me when to send him down. He's ready now." You would know that Jack had been working with Emil's problem for months; he knew Emil's symptoms were real; and when Jack stuck his neck out, I never knew him to be wrong. His reputation both as a healer and a family practitioner, who knew a great deal about cardiology, spread out to the towns surrounding Sauk Centre. Patients came to him from Grey Eagle, Long Meadow, Melrose and other towns.

Jack's other obsession was music. "Paul, I'm sending you a tape of Bach's Concerto for Two Violins with David and Igor Oistrakh. You'll love it." With him, it was never just a composer or just a composition. It was a particular performance by a particular artist or group of artists at a particular festival hall in such and such a year. He built organs, conducted the Episcopal choir in Sauk Centre, and published the annual Episcopal choir master's handbook.

His love of medicine and music was matched by his love of family. He was always interested and involved in the development of the lives of his daughters and their families. When his wife, Phyllis, became terminally ill, he converted their home into a hospital, and he devoted himself full time to her care.

After Bill Rosenberg, Arnie Adicoff and I left him with the knowledge of his own fatal illness, he turned to his old friend Sebastian Bach for solace. Later after the family had kept vigil for several days, ever in control of the situation, he stopped the I.V.s and softly slipped into a coma.

Goodbye, Jack. Thanks for all those pearls about patients, concertos and life. We'll miss you.

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*Thoracic Surgeon, Minneapolis.

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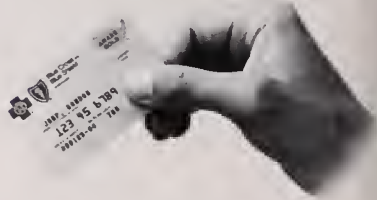

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Eight Cases of Childhood Stroke

ANTOINETTE MORAN, M.D.*
and JOHN MacDONALD, M.D.†

In a six-week period, eight Minneapolis children suffered cerebral vascular accidents following mild systemic viral illnesses. Although the exact etiology was never discovered, these strokes were presumed to be part of the same viral illnesses.

Childhood stroke is a relatively uncommon occurrence. A study of cerebral vascular disease in a well-defined pediatric population in Rochester, Minnesota[9] revealed an average annual incidence of 2.52 individuals per 100,000. However, in a six-week period, from late December 1982 to early February 1983, eight Minneapolis children were seen in neurologic consultation following cerebral vascular accidents. We estimate that this number of cases represents an annual incidence of 160 cases per 100,000.

One child in this series, a three-year-old girl with Down's syndrome, had complex cyanotic congenital heart disease, a major risk factor for childhood stroke. However, no predisposing factors could be found in the other patients. The usual clinical and laboratory tests, including clotting functions, metabolic studies, viral and bacterial cultures and serology failed to yield an etiology. Family histories were negative for cardiovascular and neurologic disease. In all eight cases, including the girl with CHD, the stroke followed a minor systemic viral illness characterized by several days of mild fever, nausea, vomiting and sore throat. All of the patients presented with lethargy, seizures, and hemipareses.

One typical case report follows, as well as a chart containing clinical findings and laboratory studies done on all of the patients.

Case Report

A three-month-old white male was born at term following an uncomplicated pregnancy, labor, and delivery. He was well until two days prior to admission, when he began to experience vomiting, loose stools, and a rectal temperature of 103'. On the day of admission, he developed generalized seizures and required artificial ventilation. On initial examination he was afebrile and lethargic but responded to deep pain. Neurologic exam was nonfocal. The anterior fontanelle was full. Pupils were equal and reactive but visual fixation was absent. Diffuse hyperreflexia with sustained knee and ankle clonus was noted.

Laboratory values on admission included a white count of 20,600 cmm^3, hemoglobin 11.4 gm, platelets 502,000/mm^3. Blood sugar, electrolytes, ammonia and liver functions were normal. BUN and creatinine were mildly elevated but returned to normal following rehydration. CSF was normal, as were urinalysis, plasma amino acid screen, FANA and complement studies. Bacterial and viral cultures of CSF, blood, nasopharynx and stool were unremarkable, as was viral serology. The electroencephalogram was diffusely abnormal with bilateral excessive slow-wave activity. A CT brain scan demonstrated bilateral posterior cerebral and middle cerebral artery infarctions with bilateral watershed anterior and middle cerebral artery infarctions.

Seizures continued for the first few days of hospitalization, but were finally controlled with Phenobarbital and Phenytoin. Mannitol and Decadron were started upon admission because of clinically apparent increased intracranial pressure. Recovery was gradual with discharge after ten days. At that time, neurologic exam was normal except for a lack of gaze fixation. On follow-up six months later, neurologic exam and CT brain were normal.

Of the eight children presented, six were male and six were white. All of them presented in a similar fashion with several days of systemic symptoms; all had lethargy and seizures with hemiparesis or hyperreflexia. EEGs were abnormal in each case and five CT brain scans demonstrated infarcts. Four of the children have some residual deficit, although the follow-up period has been less than one year. All eight are still on anticonvulsants.

Discussion

Childhood stroke has been well documented since the middle of the seventeenth century. Major risk factors include congenital heart disease, leukemia, sickle cell anemia, blood dyscrasias, arteriovenous malformation, intracranial aneurysms

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and trauma. Familial lipid-lipoprotein abnormalities have also been implicated.[4] Yet many cases have been documented where known predisposing factors are absent and etiology is uncertain.

Solomon and coworkers[10] examined 86 children with acute hemiplegia. No etiology could be found by clinical or laboratory evaluation in 25. In this group of 16 females and 9 males the hemiplegic syndrome usually began with multiple seizures and moderate hemiparesis. Sixty percent of these patients were under two years of age. On follow-up, partial recovery of motor function was seen in all patients, and when complete recovery occurred, it was usually seen within one month of the onset. Residual hemiparesis, most often of moderate degree, was found in 20 of the 25 children. Mental retardation developed in 14 and, of these, 11 exhibited hyperkinetic behavior.

A ten-year review of the Mayo Clinic experience with childhood cerebrovascular disease[9] unrelated to birth trauma, intracranial infection or trauma identified 38 patients with ischemic strokes. Of the 34 survivors, 41% had pre-existing heart disease, 38% had no predisposing condition, 12% had other associated conditions and 9% had Moyamoya disease. All but two had residual neurologic dysfunction including hemiparesis, mental retardation, learning or speech disabilities, epilepsy and movement disorders. This study also identified 31 pediatric patients with hemorrhagic strokes; 52% of these were associated with A-V malformations, 18% aneurysms, 22% no known predisposing condition, 4% heart disease and 4% other associated conditions. The mortality was 28%, although 48% had no residual disability.

Aicardi and co-workers[1] reviewed the case

TABLE 1

Clinical Findings

Patient	Age	Sex	Race	URI/Pharnygitis	Headache	Fever	Diarrhea	Vomiting	Seizures	Hemiparesis	Aphasia	Follow-up
1.	4 yr	F	Asian	+	+	+		+	+	L	+	mild L Hemiparesis
2.	6 yr	M	Black	+		+			+	R		spastic quadriparesis 6 mos. later
3.	7 wk	M	White			+			+	bilat		mild L hemiparesis
4.	3 mo	M	White			+	+	+		R		WN
5.	10 yr	M	White	+	+	+		+	+	R	+	WNL
6.	3 yr	F	White	+		+		+		R		slight R hemiparesis
7.	7 wk	M	White				+	+	+	R		WNL
8.	12 yr	M	White		+	+				R	+	WNL

TABLE 2

Laboratory Studies

Patient	WBC (cmm^3)	WBC	CSF Protein/Sugar	Brain Ct Scan	EEG Abnormality	Cultures
1.	24,000	17	WNL	bilat infarcts lenticular nuclei (angiogram WNL)	diffuse	neg
2.	8,000	267	WNL	WNL	L	neg (brain biopsy encephalitis)
3.	31,000	WNL	WNL	R temporal-parietal infarct	R	neg
4.	20,600	WNL	WNL	bilat temporal lobe infarcts	diffuse	neg
5.	10,400	15	WNL	L parietal-occipital lobe infarct	L	neg
6.	13,700	WNL	WNL	L temporal lobe infarct	L	neg
7.	8,700	WNL	WNL	L temporal-parietal infarct	L	neg
8.	-	WNL	WNL	WNL	L	neg

records of 177 children under 15 years of age suffering acute hemiplegia. In 91 cases, hemiplegia was associated with seizures. They found no statistical significance in the sex of the children nor the side of the body involved. Aphasia was fairly common but usually transitory in nature, lasting less than two months. Persistent hemianopsia was noted in greater than one-third of the patients. A history of antecedent infection was reported in 36% of cases, upper respiratory infections predominating. The CSF was normal in 66 out of 91 patients. EEGs were almost always abnormal despite normal cerebral angiograms. Aicardi found on follow-up a significant tendency towards mental impairment. Assessing intelligence at least one year after the onset of illness, he found that only 15% of his patients were mentally normal, and 75% of his patients were subject to recurrent seizures.

Recently Goutiere and Aicardi[6] reported three children with abrupt neurologic dysfunction following acute systemic illness of probable viral origin. These children, smiliar to our patient #1, presented with disturbance of consciousness followed by motor rigidity, seizures, loss of spontaneous movements and language, and axial hypotonia. They all had bilateral infarction of the basal ganglia. Viral and bacterial studies were negative. One child had complete recovery, another was doing well but died of an apparently unrelated cause and a third was left with dystonia and hyperkinesis.

Many cases of childhood stroke seem associated with viral illness, yet cultures and serologic studies are generally negative. There are a few documented cases in which specific viral agents have been implicated.[8,11] Chalhub and associates[2] were able to document Coxsackie A9 focal encephalitis in a three month old infant with fever, hemiconvulsions and hemiplegia followed by a static motor deficit and epilepsy. The etiologic agent was identified by serial CSF viral cultures. It is noteworthy that although the infant had normal humoral and cell-mediated immunity, normal leukocyte function and an intact complement system, he did not have a neutralizing antibody response to the infecting viral agent. The authors offered as an explanation the possibility of immune tolerance development or of an insufficient amount of infecting viral antigen. Such a phenomenon might explain the presence of negative serology despite brain biopsies strongly suggestive of viral encephalitis, as seen in our patient and as reported by Friedman.[3]

If indeed viral agents mediate stroke, by what mechanism is this accomplished? Weiner and Hauser[12] propose two means by which viral agents may mediate nervous system injury, both involving nerve cell surface antigens: (1) they may interact directly with a structure on the surface of a particular cell in the nervous system, or (2) an immune response against a virus may concurrently damage normal nervous tissue when there are shared antigenic structures.[4] Hammerschmidt[7] writes of the influence of infectious agents on platelet function. It has been suggested that platelets play a role in clearing bacteria from the circulation. In addition, some bacterial toxins are capable of activating platelets. Could viral agents somehow interact with platelets, creating a tendency for thrombosis? This is certainly an area where further research is needed.

Summary

Eight Minneapolis children were seen for strokes in a six-week period. All of the cases were accompanied by symptoms of systemic viral infection, yet all viral cultures and serology were negative. We can speculate that a common infectious agent, probably viral, was present in the community at that time and that these children were for some reason particularly susceptible to the development of an ischemic CNS insult following infection. There was nothing linking these kids together in terms of environment, socioeconomic circumstances, past medical history, allergies, diet or drug history. Their homes and schools are widely scattered throughout the city and suburbs. Perhaps the incidence of childhood stroke with a presumed infectious origin is more common than previously suspected.

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JOHN W. BENTON, M.D.*

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This cannot be done at random or without appropriate documentation. For example, the up-waiver children must not be below the 25th percentile for his/her current age, and the parents must document reasons for requesting participation in a higher age division.

Parents and coaches are especially sensitive to children that may be handicapped by diminutive physical stature, delayed maturity, or retarded intellect. When children are unable to function physically and/or mentally with children of the same chronologic age, parents or coaches may request a down-waiver. This must have not only their support, but two other persons, one a medical professional.

The documentation forms are available for physicians in the state who desire copies. Please contact Dale O. Johnson, Youth Sports Director, Minneapolis Park and Recreation Board.

Our thanks to the Minneapolis Park Board for national leadership in this area of adolescent sports management.

---

*Former Chairman, Resource Group on Sports Medicine

Annual Meeting
American College of Sports Medicine

The American College of Sports Medicine, Northland Chapter's Annual Meeting, will be October 25 and 26, 1985, at St. Cloud State University. A dynamic lineup of speakers revolving around the subject of body composition is scheduled. Inquiries regarding meeting or membership information are requested.

Send inquiries to Secretary-Treasurer, Northland Chapter, American College of Sports Medicine, Gregory L. Seifert, M.D., 675 Water Street, Excelsior, MN 55331.

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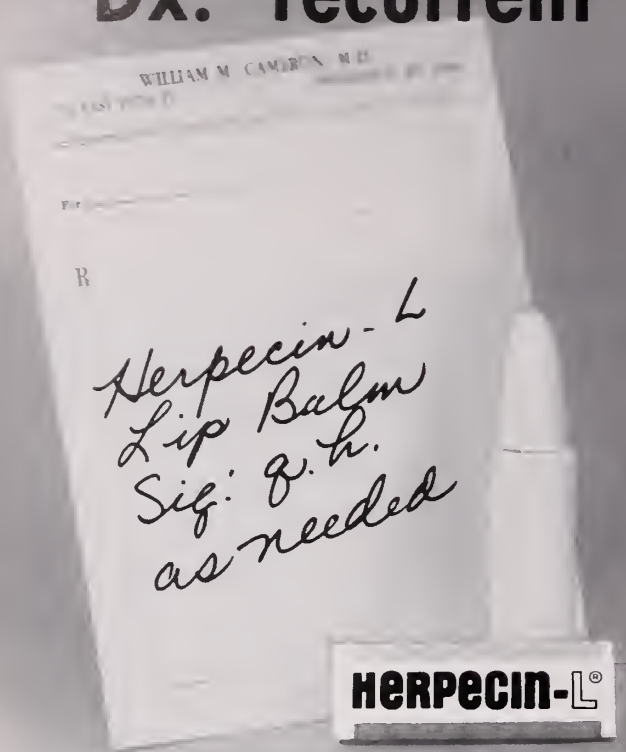

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[2] Source: Minneapolis Star & Tribune, January 16, 1984
[3] Source: The Fund's total return (Inception 10/19/81-6/30/85) includes changes in share price and reinvestment of all capital gain distributions and income dividends.
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Obstetrics and Gynecology

MMIE RISK MANAGEMENT COMMITTEE;
FRANK E. JOHNSON, M.D.,
CHAIRMAN

Allegation

Failure to obtain written authorization for circumcision.

Facts of Case

An infant male was born to Jewish parents on May 30, 1983. On the day of the infant's anticipated discharge, Dr. X, who was covering for the infant's primary physician, performed a circumcision of the child. Following the procedure, Dr. X learned that no written or verbal consent for circumcision has been obtained.

Disposition

Following negotiations with the claimant's attorney, this claim settled for $5,000 with a contribution of $1,250 on behalf of Dr. X.

Reason for Settlement

Dr. X admitted he did not verify that a written authorization had been obtained or discuss authorization with the parents prior to performing the circumcision because he assumed the nurses had obtained the authorization and was on his way out of the nursery at the time.

Risk Management Comments

Failure to obtain a patient's authorization for an invasive procedure subjects the physician to liability for battery, which is defined as "an unconsented touching." Usually these cases are indefensible.

The physician is responsible for ensuring that the patient's authorization has been obtained prior to performing an invasive procedure. This type of consent should not be confused with informed consent which requires disclosure of risks, benefits, and alternatives. While informed consent must be obtained by the physician, written authorization is usually obtained by the nurses. However, the physician will share in liability if he performs the procedure without this authorization.

Communication with patients frequently breaks down when physicians are faced with the busy day, are in a rush or are on call. Lack of communication in these circumstances can lead to physician error.

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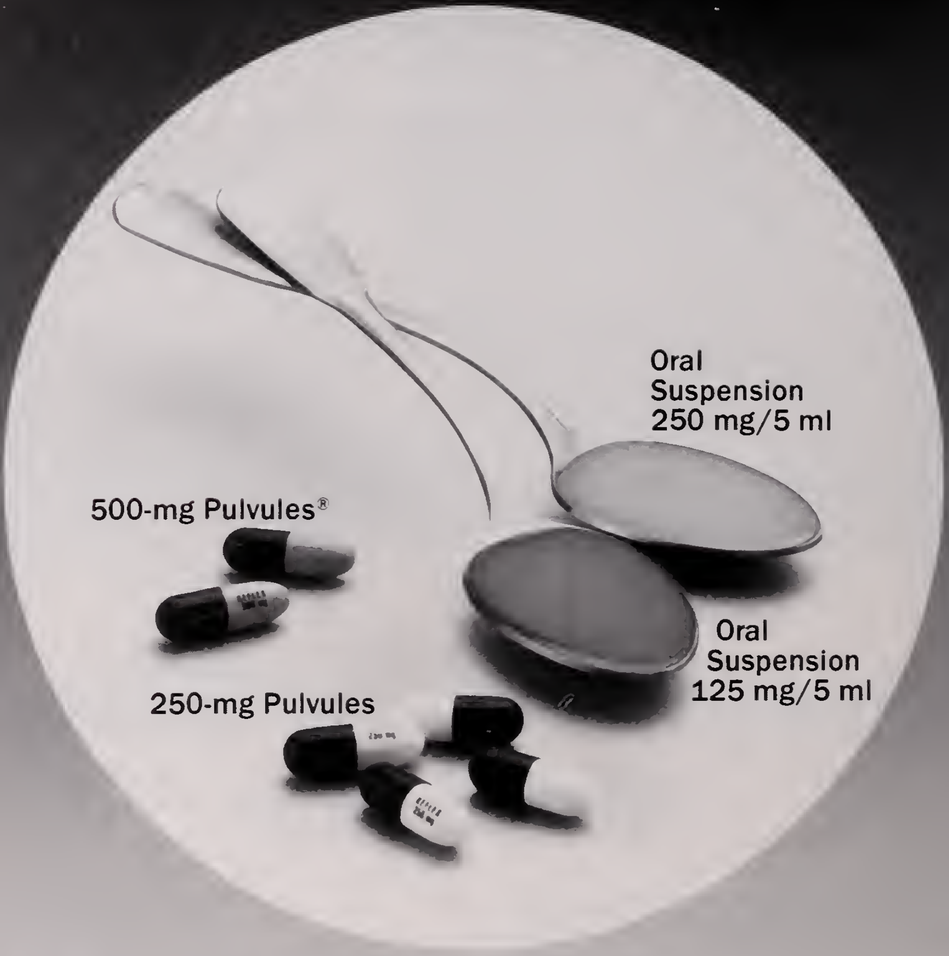

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A Clinic for Dementia
Two Years' Experience

DAVID S. KNOPMAN, M.D.:* SUSAN DEINARD, R.N.+
JOHN KITTO, A.C.S.W.;# MARILYN HARTMAN, B.A.;**
and THOMAS MACKENZIE, M.D.++

Experiences of a multidisciplinary clinic for dementia are described. The sample of patients referred to the clinic reflected a low prevalence of reversible dementias. While memory decline was by definition ubiquitous, disruptive behaviors were also quite common. The care givers of demented patients were under substantial stress and were eager to maintain contact with our clinic. Dementia patients placed in nursing homes were a heterogeneous group with regard to their level of function, underscoring the importance of the care giver's status in determining the necessity for placement in a given instance.

Dementia is a commonly encountered condition, and shifts in demographics in the United States ensure that it will become even more prevalent.[1] The burden of caring for the demented patient is a major stress to families. Nursing home care for demented patients costs several billion dollars yearly.[1] With rising demands from society for more effective treatment for dementia, the medical community must set achievable objectives for clinical management. Given the multidisciplinary nature of the care of the demented patient, the management of dementia goes well beyond what a primary care physician, neurologist, or psychiatrist operating independently can provide. A team involving physicians, nurse clinicians, social workers and psychologists may, therefore, greatly facilitate optimal management. For that reason, in May, 1982, we organized a clinic for dementia at the University of Minnesota. We present our experience with two years of work with elderly patients with memory disturbances and their families.

Methods

Procedures

The initial evaluation of the patients included complete medical history, extensive standardized mental status examination, general neurological examination, interviews with family to assess patient level of function in everyday activities, family assessment, formal psychometric evaluation, and laboratory evaluation. Each will be discussed in further detail below.

1. Mental Status Examination. (Appendix 1) The standard mental status examination included assessment of orientation, information, episodic memory, cognition and language. It included most items from the mini-mental state examination of Folstein et al.[2], items from the information-memory assessment of Blessed et al.[3], as well as a more extensive evaluation of language.

APPENDIX 1
Mental Status Examination

Orientation (one point for each correct)

________ name
________ age
________ date: day
________ month
________ year
________ day of week
________ season
________ time (score as correct if within one hour)
________ place: type (e.g. clinic, hospital)
________ place: name
________ city
________ state

Memory

________ Date of Birth (2 points for month, day, year; 1 point for month and day only)
________ Place of Birth (1 point)
________ School attended (1 point)
________ Occupation (1 point)
________ Name of a sib or spouse (1 point)
________ Name of hometown (1 point)
________ Name of an employer (1 point)
________ Place (1 point), and date (1 point) of JFK assassination
________ Date of WW2 (2 points for "1939-1945"; 1 point for partially correct answer, e.g. "1938")
________ Current President (2 points; 1 point with first name as cue)
________ Previous President (2 points; 1 point with cue)
________ 5 min. recall of three words (2 points for each spontaneous recall; 1 point for semantically cued recall)

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Reprint requests to: David Knopman, M.D., Department of Neurology, University of Minnesota Hospitals, Box 295 Mayo, Minneapolis, Minnesota 55455.

Appendix 1 (continued)

Concentration

________ Recite the months of year backward (4 points if correct. If patients fails on "months," then count backwards from 20 (2 points if correct) or count forward to 10 (1 point)

Cognition

________ Subtract 3 from 17; 3 from 14 (1 point for each)

________ Subtract 7 from 93; 7 from 86 (1 point for each; give only if patient can do serial 3 subtraction)

________ Give the sum of a quarter, dime, penny (for 2 points)

________ Verbal similarities: orange/banana (2 points)

________ Verbal similarities: violin/piano (2 points)

________ Verbal similarities: poem/novel (2 points)

Language

________ Confrontation naming of watch, band, stem and crystal (1 point each)

________ Auditory comprehension: 3 step commands (for 3 points: "Place the keys under the cup and pick up the pen with your left hand.") If patient fails, then give 2 step command ("Point to the keys and then the pen") or a 1 step command (point to ceiling)

________ Reading (2 points for reading the command and carrying it out: "Point to the door.")

________ Spontaneous speech information content (maximum score, 5 points). ("Tell me about your hobbies or what you do in your spare time.") 5 - normal information content; 4 - rare word finding difficulty or paucity of information content; 3 - moderate word finding difficulty; 2 - marked word finding difficulty; 1 - substance words rare; 0 - null information

Visuospatial

________ Copy a cube (maximum score, 4 points)

APPENDIX 2

Changes in Performance of Everyday Activities, Administered to Care Giver

Scoring: 3 = normal or no problems; 2 = occasionally abnormal; 1 = usually abnormal - a common problem, or a very serious one, even if only occasional; 0 = always abnormal

# Items marked should be scored as '3' if patient never engaged in such activities prior to illness.

________ Ability to perform ordinary (household) chores or tasks that patient had previously been able to do#

________ Ability to cope with small sums of money unaided

________ Ability to remember short list of items (shopping) or sequence of tasks

________ Ability to find way about indoors

________ Ability to find way about familiar streets

________ Attention to safety issues in use of potentially dangerous items: smoking, firearms, power tools.

________ Does patient still drive?

1 = yes; 0 = no

________ Ability to interpret surroundings, recognize family

________ Ability to recall recent events

________ Ability to feed self independently

________ Ability to dress self correctly

________ Complete urinary sphincter control

________ Complete bowel control

________ Adequate regard for personal hygiene

________ Success in communicating needs

________ Could the patient manage medications? (Score only if on medications)

APPENDIX 3

Changes in Personality, Aberrant Behavior, Administered to Care Giver

Scoring: 3 = normal; 2 = occasionally abnormal; 1 = usually abnormal - a common problem, or a very serious one when it occurs, even if only occasionally; 0 = always abnormal

________ Willingness to comply to directives

________ Excessively mellow, complacent, retiring

________ Impairment of regard for feelings of others, esp caretaker

________ Catastrophic reaction: excessive emotional response to a situation, especially a task failure

________ Increased petulance and irritability

________ Hilarity in appropriate situations

________ Paranoia, suspiciousness, accusatory behavior

________ Nighttime wandering, other nocturnal misadventures

________ Daytime wandering

________ Pastimes previously enjoyed relinquished

________ Diminished initiative or growing apathy

________ Purposeless hyperactivity (whistling, pacing, tapping, etc.)

________ Shortened attention span

________ Excessive reminiscing *now*

________ Hiding or misplacing things

________ Delusions (with TV, claiming others are in home, etc.)

________ Appears or complains of depression, feelings of worthlessness, sadness, within past two months

________ Threat of suicide, within past two months

________ Separation anxiety

2. *Scale of Activities of Daily Living*. (Appendix 2) Our assessment of functional skills included 16 questions directed to the care giver covering such areas as geographic orientation in the home, incontinence, etc. Contained within our list were items from the Blessed dementia scale[3] (which has been shown to correlate with density of senile plaques found at autopsy in patients with Alzheimer's Disease) as well as other items of importance (such as communicative capacity). Each item was rated on a four point scale: normal or not a problem - 3; occasionally abnormal - 2; usually abnormal or a major problem when it occurs - 1; always abnormal or a constant, serious problem - 0.

3. *Inventory of Personality Changes and Disruptive Behaviors*. (Appendix 3) This series of questions, administered to the primary care giver, assessed personality (e.g., excessive irritability, par-

anoia), mood and the presence or absence of disruptive behaviors.[4,5] The rating method was the same as the activities of daily living scale.

4. *An Inventory of Coping Skills of the Care Giver.* From those items in everyday living, personality changes or behavioral disturbances in the patient which were seen as abnormal by the care giver, the care giver's response to those problems was sought. In other words, if the care giver reported that irritability was a serious problem, the care giver was queried as to how he/she coped with the problem, e.g. ignored it, confronted the patient, broke down and cried, etc. We recorded a rating of the coping methods of the primary care giver as an adequate, a borderline adequate, or inadequate approach. Our criteria for adequacy included protection from potential dangers (as in dealing with patients who smoke), and effectiveness in limiting the frequency or severity of the disruptive behavior.

5. *Formal Psychometric Battery.* The battery consisted of a set of standardized tests that sample a wide range of verbal and nonverbal cognition and memory skills. Standardized measures of memory, language and cognition provided a more extensive and thorough view of the patient's intellectual functioning than can be obtained with bedside testing alone. Further details of the battery can be obtained from the authors on request.

6. *An Inventory of Living Situation of Patient and Primary Care Giver.* This was obtained by a social worker in the course of the interview with the primary care giver. This included assessment of financial and social stability of the home environment, nature of the support systems for the primary care giver, and care giver health.

7. *Evaluation for Affective Disturbances.* Each patient was seen by a psychiatrist who performed a DSM-III interview to assess symptoms of depression.[6] Because the diagnosis of depression in an elderly individual with any level of cognitive impairment was problematic, we rated the likelihood that depression may be playing a major role in the patient's overall condition rather than making a dichotomous decision, i.e. "yes-depression" or "no-depression."

8. *Laboratory Studies.* EEG, CT scan of head with contrast enhancement, hemogram, vitamin B12 level, thyroid functions, liver functions, calcium, electrolytes, BUN were performed at the time of the initial evaluation.

Following the initial assessment, the results of examinations, tests, and interviews and their interpretation were given to the family. At that time, genetic aspects, prognostic issues, financial implications, legal concerns and social issues were discussed. Counseling of the family was also initiated if family disagreement was perceived as a significant impediment to management. If the patient's behavior was not disruptive and was likely to remain so, the patient and family were asked to return to the clinic in six months' time. If disruptive behaviors were discovered, attempts at nonpharmacologic or pharmacologic interventions (or both) were made, and the patients were seen on a more regular basis.

Definitions

Criteria for primary degenerative dementia are as follows: a history of gradual loss of intellectual function without a history of stroke or other major intercurrent illnesses. A disturbance of memory plus another abnormality such as language, reasoning or alteration in personality must be present.[6] When other potentially contributing conditions are present such as a history of alcoholism or systemic disease, patients are diagnosed as primary degenerative dementia *with* another contribution factor to signify that they may represent a different illness from an uncomplicated primary dementia. Multi-infarct dementia is defined by a history of stroke, with a major abrupt change in intellectual function associated with the stroke. Focal neurologic signs are also necessary for the diagnosis of multi-infarct dementia. Patients with CT scan evidence of extensive infarction without a history of stroke are also included within the category of multi-infarct dementia. Depression is diagnosed when the mood alteration appears first, when depression appears to overshadow whatever cognitive decline may be present, or when the patient meets DSM-III criteria for a major depressive illness in the setting of cognitive decline.[6] Other diagnoses follow from accepted criteria and strong evidence for a simultaneous onset of systemic symptoms (e.g., cardiac arrest) and memory loss.

Results

Patient Description

The mean age of the first 100 patients was 70 years with a range of 47 to 87. Male to female ratio was 2:5. The mean duration of symptoms was approximately three years with a range of less than one year to 11 years. Only 7% had a duration less than one year, 80% a duration of two to five years, and 13% greater than five years.

Diagnoses

The major reason for referral to our clinic was that a patient had been given a diagnosis of "Alzheimer's disease." Our sampling of patients thus was biased against readily identifiable diseases. Indeed, of the first 100 patients, 88% were diagnosed with primary degenerative dementia. Two of these patients had low Vitamin B12 levels and one had a TSH of 17, but were felt to have primary degenerative dementia since their intellectual symptoms did not change after trials of parenteral B12 or thyroid replacement. Four percent had a definite history of stroke, and fulfilled the criteria for multi-infarct dementia. Two additional patients had findings on CT scan suggestive of diffuse white matter encephalomalacia (Binswanger's disease), giving an overall percentage of dementia due to vascular disease of 6%. Three percent of the patients were felt to have a major depressive illness. Two patients had alcoholism as a major complicating factor, and one patient's intellectual deterioration appeared to be a sequelae of anoxic encephalopathy following cardiac arrest.

Frequency of Disruptive Behaviors

Major deficiencies of daily functioning and behavior were common (Table). Forty percent of our patients had some difficulty with either sphincter control, hygiene, or dressing. Many had severe difficulty with finding their way about indoors, and a third were noted by their primary care givers to have inadequate concern for potentially dangerous items such as the stove or power equipment. The ability to communicate was noted to be moderate to severely involved by the primary care givers in over half. Noxious behaviors of some kind were noted in over half of our patients and included difficulties with irritability, nocturnal misadventures, hyperactivity, hiding items or misplacing items. On a composite that included ratings on all of these areas, 31% of patients were noted to have severe difficulties. While disruptive behaviors were more common in patients with more severe dementia, such behavior occurred in patients with milder disease as well.

TABLE

Frequency of Disruptive Behaviors and Failures in Activities of Daily Living in Patients with Primary Degenerative Dementia

Item	*Percent with Moderate to Severe Problem*
Failure to find way in own home	18
Failure to find way in neighborhood	35
Attempts to use potentially dangerous equipment (i.e. stove)	15
Difficulty feeding self	10
Difficulty dressing self	30
Urinary incontinence	7
Bowel incontinence	2
Disregard for personal hygiene	32
Difficulties in communication	53
Fails to obey wishes of caretaker	18
Irritable but not physicially threatening	26
Hits, pushes or shoves when irritable	19
Paranoid, suspicious	36
Wanders, is disruptive at night	18
Wanders away from home	5
Engages in purposeless hyperactivity	33
Hides or misplaces items daily	69

The Care Giver

In 65%, the primary care givers were the spouse, children in 32% and another relative in 3%. Quantitation of care giver responses was added to our protocol only in the past six months so that data on the care giver was available on only 25 patient-care giver pairs. Assessment of care giver stress showed that 36% rated themselves as being moderately to severely stressed. Very few were utilizing community resources prior to visiting our clinic - 60% were using none; many more did so after being informed of the types of available services. In over 90% of the families coming to our clinic, the spouse alone or the spouse with one child was the primary care giver. In only two instances did multiple family members participate in day to day care.

Level of care giver stress or care giver despondency did not relate closely to the patient's level of orientation. Care givers who rated themselves as stressed or despondent were no more likely to be caring for a very confused patient (as opposed to a mildly confused patient) than a non-stressed care giver.

Observations on Patients Placed in Nursing Homes

A total of 15 patients with primary degenerative dementia entered nursing homes shortly after first being seen in our clinic. They did not differ in age or duration of disease from the non-institutionalized patients. The level of performance on mental status examination and on activities of daily living among patients who entered nursing homes was much lower than the patients who did not. The number and severity of disruptive behaviors was also much greater in the patients who entered nursing homes than those who did not. No specific score on mental status examination separated patients who were placed in nursing homes from those who were not (Figure). Rather, many problems including care giver stress, care giver health, poor mental status level, and severe disruptive behaviors were present in the patients who were placed in nursing homes. The major specific areas of *patient* dysfunction that led to nursing home placement included regular incontinence, uncontrollable wandering, regular nighttime awakening, impairment of ambulation and regular, unmodifiable irritability. Given the convergence of deteriorating patient behavior and deteriorating care giver coping potential, nursing home placement was clearly appropriate, and the visit to our clinic may have crystallized the decision for many.

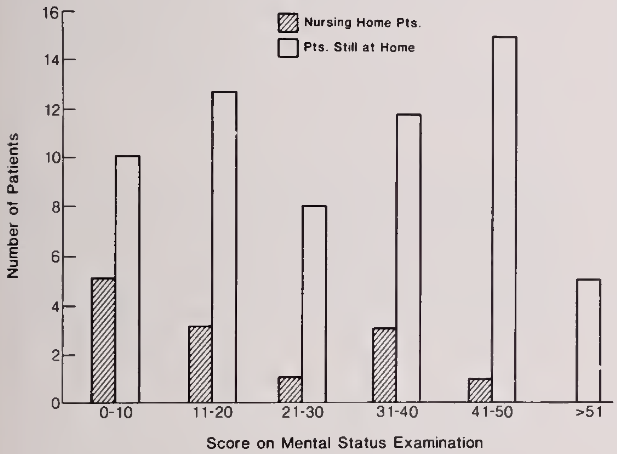

Figure - Histogram comparing distribution of scores on mental status examination between patients placed in nursing homes within one month following testing and patients continuing to live at home. Total correct score 64. There were many non-institutionalized patients with very low scores. Most, but not all, of the nursing home patients had very low scores.

On the other hand, there were many demented patients living at home with spouses or children who had very low scores on formal mental status examination or on the activities of daily living scale. Moreover, there were a few non-nursing home patients with as severe disruptive behaviors as the patients placed in nursing homes. Thus, while dementia patients who were placed in nursing homes tended to be among the more severely impaired, there were equal numbers of patients with near similar degrees of impairment who were managed at home, with acceptable stress levels and safety in most cases.

Measuring Utility of the Clinic

We used the rate of continued contact with our clinic as a means of gauging how families perceived its usefulness. Of the first 100 patients, 56% have returned for follow-up visits. The return of another 14% is pending, as they have been recently seen. An additional 8% of our patients who returned for follow-up visits have died. The remaining 22% have been lost to follow-up. Among those who failed to return were several patients who moved out of state to be with children following confirmation of the diagnosis. Several others who were lost to follow-up were patients who were so irritable that their families were unable to bring them back to the clinic without undue coercion.

Discussion

Our multidisciplinary clinic for dementia appeared to fulfill a definite need for patients with dementia and their families. Our major impact was often not in the area of diagnosis, as the low yield of reversible syndromes we uncovered suggested that the quality of initial diagnostic efforts in our community was high. We perceived the unique role for our clinic was as a resource for long-term management, in which expertise from many areas (neurologic, psychiatric, nursing, social work) was coordinated and presented to families. Such a unified and multidisciplinary approach seems essential in the treatment of dementia.

Disruptive or noxious behaviors were common in our patients; a finding noted by others.[4,5] Stress on care givers is not generally brought on by the memory loss alone, but rather by the frequency and severity of associated behavior disturbances.[7]Unfortunately, these behaviors appeared to be underrecognized. Care givers themselves often accepted some disruptive behaviors as inevitable. We found that simply discussing the problem and offering suggestions to assist with such problems as nighttime wandering or irritability were very successful in providing the caretaker with help and led to improvement in the patient's behavior. At other times, we resorted to the use of psychotropic medications, whose indications are beyond the scope of this report.

Indeed, information concerning optimal management of feeding, bowel and bladder control, and behavior control was highly valued by families, since the families of patients with dementia display a strong desire to keep their family member at home as long as possible.[8] Unfortunately, instruction of this sort is time-consuming, must usually be done on a one-to-one basis, and is not taught to physicians. Thus, other professionals, such as nurse-clinicians, must be available to work in tandem with physicians in care giver education. As supplements, there are several well-written books[9,10] that discuss management of demented patients. Families are also encouraged to attend meetings of Alzheimer's Disease and Related Disorders Association support group meetings.

The desire to keep a patient at home was so strong in some families that it caused delay of placement even when it was strongly indicated for any one of the reasons mentioned above. Counseling concerning optimal time for nursing home placement was a critical concern of ours and was one that required the input of all team members. It involved dispelling myths about nursing homes, but it also required supporting a family in its belief that nursing home placement was best for the patient. This was a very serious issue for families to cope with.

The physical and emotional status of the care giver was a critical part of the evaluation of the demented patient. Working strictly within a "medical" model of disease, the care giver's emotional and physical health may be overlooked. For continued home management, a competent care giver was *the* most important factor. It appeared possible that in many instances the care giver's stress provoked the irritability in the patient. In other cases, care giver stress was the predominant indication for the patient's nursing home placement, this occurring among patients with less severe cognitive decline or behavioral disturbances. Thus, treating the care giver psychologically was a necessary part of the management of the demented patient, again an area in which the physician alone lacks the necessary resources and training.

Dementing illness differs from many other "terminal" diseases in that the duration of the disease is very long. The needs of the patient and family change over the course of the illness and require continued contact with health professionals to address emerging problems. We believe that dementia is an illness in which a team approach can play a considerable role in minimizing suffering even if curative treatment is not available.

Acknowledgment

This work was supported in part by the Twin Cities Chapter of the Alzheimer's Disease and Related Disorders Association. Pauline Sharpe provided secretarial assistance.

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Management of the Diabetic Patient before, during and after Surgery with Special Emphasis on Uremic Patients and Kidney Transplant Recipients

CALIANN T. LUM, M.D.;* DAVID E.R. SUTHERLAND, M.D.;†
FREDERICK C. GOETZ, M.D.;† and
JOHN S. NAJARIAN, M.D.†

Between January 1968 and December 1983, 529 diabetic uremic patients received kidney transplants at the University of Minnesota. They now constitute nearly 40 percent of our kidney transplant recipients. Previous studies from this institution indicate that kidney transplantation offers these individuals superior overall survival and quality of life when compared to results obtained with chronic dialysis. Because of our increasing experience in transplanting this group of patients, standardized routines for perioperative and intraoperative management have evolved. The protocols and rationale for our current management plan are the subject of this report.

Insulin dependent diabetes mellitus is a common cause of renal failure. If every patient with diabetic nephropathy were treated, they would constitute approximately 25 percent of all patients dialyzed or receiving kidney transplants for chronic renal failure.[1] These patients are viewed as less than ideal candidates for organ transplantation, however, because of their increased risk for infection, progressive cardiovascular and peripheral vascular atherosclerosis, difficulties in blood glucose management, blindness and peripheral neuropathy.

At the University of Minnesota, we have taken a special interest in the medical management and kidney transplantation of diabetics with end-stage renal disease. Of the 1,995 kidney transplants performed in adult patients between January 1968 to December 1983, 529 have been performed in patients with insulin dependent Type 1 diabetes mellitus. In recent years, approximately 40 percent of our renal recipient transplant recipients have been diabetic.

We have found that kidney transplantation is superior to dialysis for the long-term management of the diabetic patient with renal failure.[2] Until recently, the overall survival statistics of the diabetics who received renal transplants were less than those of nondiabetics, but transplanted uremic diabetics suffered much less morbidity from their disease and enjoyed a higher quality of life than their counterparts on dialysis.[3] Unfortunately, many centers are reluctant to treat end-stage renal disease in diabetic patients by transplantation. This reluctance is due, in part, to the relatively complicated perioperative management of their systemic disease. Over the years, standard guidelines have evolved at the University of Minnesota which simplify the perioperative and intraoperative management of diabetic uremic patients undergoing transplant related surgical procedures. Minimization of operative morbidity has contributed to the improved results of transplantation in diabetic patients. Recipient and graft survival rates, at least during the first two years after transplantation, are now the same for diabetic and nondiabetic patients.[4] Other factors have also contributed to the increase in transplant success rates, including preoperative blood transfusions,[4] improved immunosuppression,[5] and better long-term management of diabetes,[6] but the immediate perioperative management is equally important. The guidelines we use for operating on diabetic transplant patients are described in the subsequent sections. Most of the management principles also apply to nonuremic diabetic patients who must undergo surgery.

General Principles of Management

The fundamental goal in managing our diabetic patients is to maintain plasma glucose levels between 120-200 mg/dl and to prevent ketoacidosis. This is achieved through the constant infusion of insulin during the perioperative period, and the intravenous administration of a minimum of 200 grams of glucose per day. Additional precautions are also taken to minimize the progression of vision loss by efficient dialysis, elevation of the head during operation, and good blood pressure control to minimize intraocular hemorrhage. Because of poor wound healing and low resistance to infection, prophylactic antibiotics are used routinely, and skin staples for wound closure are left in place a minimum of three weeks. Hyperglycemia and severe osmotic diuresis due to large volumes of intravenous glucose solutions are prevented or treated promptly by close monitoring of plasma glucose levels. Following the immediate postoperative period, insulin is given by constant intravenous infusion with the dose adjusted according to frequent (every one to four hours) plasma glucose determinations. During later convalescence, the patients are managed with subcutaneous doses of long and short acting insulin given two to four times daily.

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Preoperative and Intraoperative Management

For most surgical procedures on transplant patients, diet is reduced to clear liquids one to two days before operation (depending on the procedure). At that time, the patient's daily insulin dose is reduced (both long-acting and short-acting to compensate for reduced caloric intake). The evening before or the morning of the operation, the patient is started on intravenous fluids (with dextrose) and begun on a constant insulin infusion at an hourly rate calculated to deliver approximately half of their usual daily insulin dose over 24 hours. Adjustments thereafter are made by plasma glucose monitoring. A plasma blood glucose and potassium level are drawn immediately prior to the time of operation and are sampled every hour while the patient is in the operating room and during recovery from anesthesia. Following surgery, unless large fluxes in fluid volume are involved, plasma glucose and serum potassium can be measured every two hours.

During the operation, intravenous regular insulin is usually given at one-half to four units per hour as needed to maintain euglycemia and to anticipate continued or increased intravenous infusions of glucose-containing electrolyte solutions, depending on intraoperative needs. Intravenous insulin avoids problems with absorption variability which can occur when the subcutaneous route is used. If the infusion rate of intravenous fluid is less than 200 ml/hr, solutions containing 5 percent glucose can be used. When rates of infusion exceed this amount, 1 percent glucose solutions are used instead. It is also important to know the serum potassium concentrations at all times, because severe hypokalemic complications can occur when hyperglycemia is treated acutely with insulin. In diabetic uremic patients with atherosclerotic heart disease, acute hypokalemia may precipitate an episode of fatal arrhythmia. Supplementary intravenous potassium is given as needed (usually 10 mEq per hour through a central venous line) to keep the serum level at approximately 4.0 mEq/L.

Immediate Postoperative Management

During the immediate postoperative period, our diabetic patients receive a minimum of 200 grams of intravenous glucose to prevent ketoacidosis. An infusion of 50 percent glucose is started in the recovery room and maintained at 20 ml/hr. An insulin infusion (one unit regular insulin/ml of normal saline) is also started at a rate of four to six units per hour. These infusions are administered, through separate lines, using the Harvard infusion pump system. The infusion of 50 percent glucose is maintained at a constant rate, and the insulin infusion rate is varied up or down to slowly bring the plasma glucose level into the desired range of 120-200 ml/dl. If needed, periodic boluses of four to ten units of regular insulin are given every four hours to treat hyperglycemia. These infusions constitute the major postoperative fluid intake of anuric patients. In patients who are diuresing, the infusions are given in addition to fluids for urine replacement. When urine output exceeds 150-200 ml/hour, glucose in the urine replacement fluid is reduced from 5 percent to 1 percent. The infusion of 50 percent glucose provides a constant glucose source regardless of the fluctuations of additional intravenous fluids related to urine replacement. Plasma glucose levels are drawn hourly until the trend of the plasma glucose on a set infusion rate has stabilized. Then, subsequent plasma glucose levels are drawn every two to four hours as needed to maintain good control.

When the patient begins to take oral liquids, the infusion is reduced to provide 100 grams of glucose per day and the intravenous insulin is continued. When the patient is able to ingest solid food, a diabetic diet is resumed, and insulin administration is converted to a subcutaneous dose schedule, usually given twice daily, but regular insulin may be given more often.[6] The following conversion formula is used: the total daily intravenous dose of insulin is determined and 80 percent of this value is taken as the estimated 24 hour requirement for subcutaneous insulin on the twice daily schedule. Two-thirds of the total estimated 24 hour requirement is the calculated morning insulin dose, and two-thirds are given in the long acting form and one-third as regular insulin. NPH and Lente insulin are much alike in action and can be thought of as lasting about 24 hours. Once dosage is adjusted with one or the other preparation, however, it is unwise to change without careful thought as well as full explanation to the patient. There may be true pharmacologic differences, as well as physiological importance, at issue. Many experienced physicians consider Lente insulin to be too long-acting, with a considerable risk of late-night hypoglycemia. Morning and evening doses of pre-meal/long acting insulin are supplemented by additional doses of regular insulin to maintain the two-hour postprandial plasma glucose less than 200 mg/dl. In those patients who have not received a kidney transplant and are not on high doses of steroids, this formula is modified relatively easily to a stable in-hospital dose schedule. After patients leave the hospital and their diet changes, modifications of their insulin doses are required as with any diabetic. However, those patients who have received a kidney transplant are more difficult to manage because of the gluconeogenic effects of high dose steroids. Glucose levels in these patients are evaluated every four hours throughout the in-hospital stay. Outpatient modification of insulin dosage must be followed closely and adjusted as the steroid dose is reduced after transplantation.[6]

Later Management of Plasma Glucose Levels

Some patients are receiving continuous insulin by means of an external insulin pump as part of an overall study on the effect of control of diabetes on progression of vascular complications.[6] However, most patients are on home glucose monitoring with insulin doses adjusted to maintain fasting plasma glucose levels of <120 mg/dl and postprandial glucose levels of <200-250 mg/dl.

With relative ease and accuracy of various methods of home blood glucose monitoring, the measurement of urine glucose by qualitative tests now tends to receive less emphasis by physicians as a guide to insulin requirements. In the patient with a recently transplanted kidney, the threshold for glucose spillage may be lowered; bladder emptying may be poor. Both problems can lead to inappropriate insulin administration, especially under acute hospital conditions.

On the other hand, urinary glucose loss may be important for its own sake, contributing to dehydration. Also, qualitative tests for ketones in the urine are still indispensable for rapid assessment of a sick patient and are in no way replaced by blood glucose measurement. Both in the hospital and at home, regular testing of the urine—simple, inexpensive and quick—retain its usefulness.

Quantitative measure of urine glucose—in grams per 24 hours or a fraction of the day—should also be kept in mind for the occasional patient with complex management problems. A loss of 100 gm or more per day is not unheard of and can represent a significant drain on calorie balance as well as water and electrolytes.

Other Important Factors

Even with close monitoring of plasma glucose levels and insulin treatment, changes in urine volume secondary to periodic glycosuria may occur. Failure to control hyperglycemia in a patient with a well functioning transplanted kidney can result in severe dehydration secondary to osmotic diuresis. Rapid weight loss, postural hypotension, increased hematocrit, decreased renal function, and pre-renal azotemia (over and above that expected due to steroid effect) can be clues to this subtle complication of inadequate management of hyperglycemia. After hyperglycemia (and hence, glycosuria) is controlled, the large volumes of urine produced by osmotic loading will diminish, and patients should be observed closely for fluid retention and weight gain which are sometimes a prelude to acute episodes of pulmonary edema.

In addition to the management of plasma glucose levels, diabetic uremic patients have other problems which must be dealt with in preparing them for and treating them after major operations. A significant management problem is diabetic enteropathy. During dialysis, these patients often have severe nausea and constipation which, in our hands, does not respond well to a high fiber diet or bulk laxatives. Our major long-term therapeutic modalities include both mucosal irritants, and stool softening agents such as dioctyl sodium sulfosuccinate. The immediate preoperative acute treatment consists of voluminous saline enemas and cathartics, such as magnesium citrate. For symptomatic patients with pyloric spasm, gastric atony and/or constipation, we use metoclopramide at a dose of 10 mg given one half hour before each meal. This treatment seems to decrease nausea and constipation in some patients, and may prevent pyloric spasm, and increase upper gastrointestinal tract motility.

Atherosclerosis and microvascular disease are corresponding factors in the surgical approach to uremic diabetics. Occasionally, we must perform an endarterectomy on the recipient vessel to prepare for an arterial anastomosis. Although we prefer not to divide the hypogastric vessel in diabetic patients (because of the collateral flow it provides), this vessel often has fewer atherosclerotic plaques than the external iliac artery and is thus more suitable for revascularizing the transplanted kidney. When necessary, we endarterectomize this vessel to increase arterial inflow. Where we elect to use the external iliac artery, we will do an endarterectomy as needed and perform the anastomosis as close as possible to the origin of the hypogastric artery.

Diabetic microvascular disease interferes with tissue oxygenation. Phagocytic efficiency and fibroblast proliferation are decreased in hypoxic areas. When microvascular disease is coupled with large vessel arterial insufficiency, normal mechanisms for wound repair and antibacterial phagocytosis are hindered. For this reason, wound healing may be impaired in diabetics. Maintenance of plasma glucose levels near the normal range improves these functions to a limited degree. The high doses of steroids that transplant patients receive also counteract the normal healing processes and aggravate hyperglycemia. For these reasons, surgical wounds are protected for a minimum of five to seven days, and sutures or staples used for wound closure are not removed before three weeks. Furthermore, all patients undergoing operation receive prophylactic antibacterial coverage (cephalosporin) before and after operation. These policies are maintained in all of our immunosuppressed patients.

The same precautions hold true regarding the bladder repair for a standard Ledbetter-Politano ureteroneocystostomy performed at the time of transplantation: In nondiabetic kidney recipients, the indwelling urethral catheter is removed three days after operation to prevent bladder rupture because of high urine volume. Catheters are not removed from diabetic recipients until postoperative day five.

Finally, our recent experience with patients already committed to use of an external insulin pump (continuous subcutaneous insulin infusion, CSII) suggests that they may do exceptionally well during the pre- and post-transplant periods. Patients thoroughly familiar with adjustment of basal and bolus insulin doses need only be encouraged to boost their dosage generously when they resume self-management after transplant and when continuous intravenous insulin is withdrawn.

Summary and Conclusions

Kidney transplantation is the best long-term management of uremia in the diabetic patient. In this report, we describe some of the guidelines for routine and safe management of these patients that we have developed at the University of Minnesota Hospitals. Some of these principles also apply to the management of nonuremic diabetic patients who must undergo surgery.

Acknowledgments

The basic program of diabetic insulin management described in this report was developed in consort with a number of individuals, and we gratefully acknowledge their contributions: Dr. Jose Barbosa, and Nursing Specialists Cindy Forsman, Lois Recker, Lois Bartell, Lois Menth and Barbara Elick.

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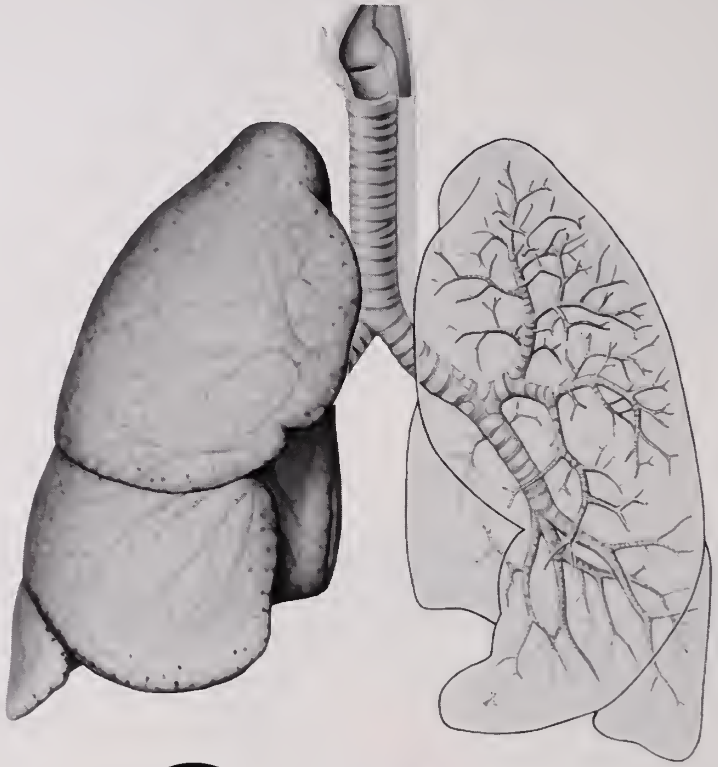

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Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile* Other causes of colitis should be ruled out

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Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

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Hepatic – Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematopoietic – Transient fluctuations in leukocyte count predominantly lymphocytosis occurring in infants and young children (1 in 40).

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A Backwoods Doctor Giles James Sheldon, First Practicing Physician In Houston County on the Minnesota Frontier

Historical Vignette

RUTH J. MANN, B.S.* and
JACK D. KEY, M.A., M.S.†

Giles James Sheldon, M.D. wrote in his occasional journal, December 12, 1867: "Pleasant day,—sun shines; Children in school—I am reading medical works—"[1] (Figure 1).

He left no further record of what he was reading that day, but his words create a pleasing picture, probably of rare occurrence for those times. Doctor Sheldon was the first regular M.D. to practice in southeastern Minnesota, and he had little leisure. For a frontier doctor, however, Sheldon had a fine medical library. Many of his books have been kept, as well as his diaries and account books. These books and documents, which have been given to the Mayo Library by the Sheldon family, present a sparcely descriptive but authentic picture of medical practice in rural Minnesota in the 1850s through the 1870s.

In 1850, Daniel Drake had written that he had seen the Upper Mississippi to the mouth of the Fever River, but from that point on to the Falls of St. Anthony there were only a few villages and two military posts. Since Drake as a medical topographer was only interested in populated areas, he did not attempt to study or describe the region.[2]

By 1851, however, settlers had begun to pour into Minnesota. A steamboat pilot, in his reminiscences,[3] recalled that every river boat could make money from 1852 to 1857 because there were not enough boats to carry the people who wanted to come to this newly opened farmers' and lumbermens' paradise.

Brownsville, founded in 1848 by Sam Brown, was the first landing on the river in Minnesota. It was here that the history of regular medical practice in southeastern Minnesota began.

On June 27, 1853, Giles James Sheldon, M.D. (1806-1880), and his family, traveling on the Mississippi river boat, *The Doctor Franklin*, arrived at Wild Cat Landing, near Brownsville, Territory of Minnesota. For $400 they purchased and settled on the 320 acre Samuel McPhail claim at Big Spring, two and a half miles west. There was a Winnebago Indian village and council house about 40 miles away, 1⅛/¼ miles from the present site of Rushford.[4,5] The advice Benjamin Rush gave to medical graduates in New England in 1789,[6] to establish themselves as soon as possible on a farm was a practical necessity on the Minnesota frontier in 1853. In spite of the speculative land boom and influx of settlers, the country was still thinly populated. There were only about 20 medical doctors in the territory, mostly in the Fort Snelling area. They were, however, a vigorous, forward looking group. The first medical society in the Territory, christened "The Minnesota Medical Society" (later the Minnesota State Medical Association) was organized on July 23, 1853 in St. Paul.[7] There is no record of Doctor Sheldon's participating in the Society's activities, even though he would have been qualified for membership. On October 2, 1856, the Big Spring farm was sold to John Mullen and on November 2, 1856, the Sheldons moved to Mound Prairie on the

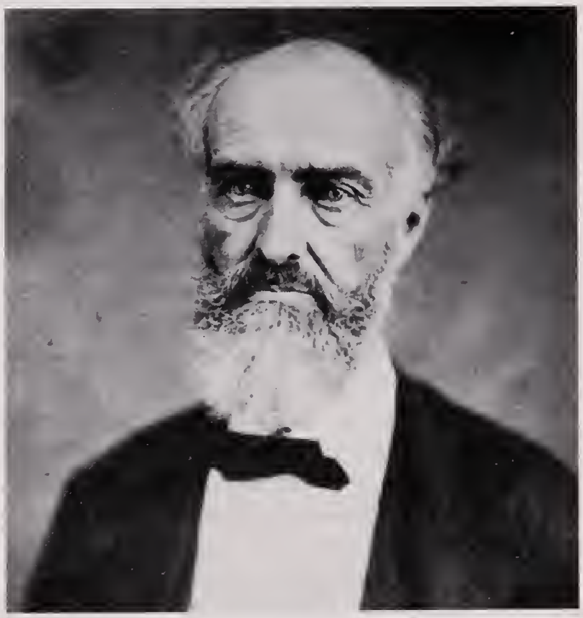

Fig. 1 - Doctor Giles James Sheldon. Photograph taken at Hokah, Minnesota, July 10, 1873, by 18-year-old boy artist.

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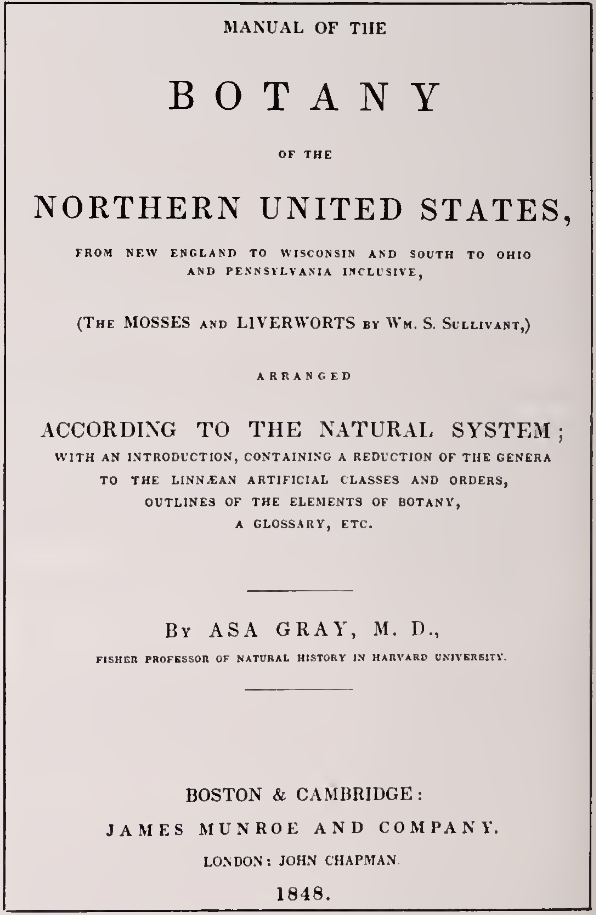
Root River where they had land. (This farm considered today as the Sheldon family farm is operated by Sumner and Ruth Sheldon, the third generation to do so. In its nearly 130 year history, this Sheldon farm has never been rented, mortgaged, or tax delinquent.)[5]

Giles James Sheldon was born May 12, 1806, on his father's farm, near Norway, Herkimer County, in central New York state. He was the oldest child of Caleb, Jr. and Rebecca Giles Sheldon. His family was of English extraction, descended from one of three Sheldon brothers, officers in Cromwell's army, who had fled to America in 1661 to escape the vengeance of Charles II.[4,5]

According to the "In Memoriam" in Sheldon's journal, two of his six siblings died of tuberculosis. Clotilda Sheldon, born 1808, died in 1829 of consumption. A brother, born January 20, 1818, died June 1819, with "Scrophula of glands of jaw and neck." Giles, himself was "sickly" as a child, and consequently received his early education from his mother at home. He began his formal education at fourteen at Fairfield Academy, Fairfield, N.Y. on February 5, 1821, then under the administration of Charles Avery, principal. Irregular attendance because of poor health made Sheldon's academic career more interrupted and longer than was usual for the day. He enrolled at Union College, Schenectady, N.Y. in April, 1827, to study theology. This institution, under the presidency of Eliphalet Nott (1773-1866), had an excellent scholastic reputation. Nott's students were allowed a larger measure of self-government than was common in American colleges at the time. Also, a scientific course of study was offered as an alternative to the traditional classical curriculum. In this atmosphere, Sheldon became interested in studying medicine as well as theology. But 1828 found him back on his father's farm, recuperating. In the fall, he was able to re-enter Fairfield Academy, and found employment as an usher. Offered more money by the trustees of Camden Academy, Camden, N.Y. ($350.00 annual stipend), Sheldon went there in June, 1829, but could work for only nine months. Following an episode of hemoptysis, he spent most of the next year (1830) at home under the nursing care of his mother and sisters. Doctor Westel Willoughby of Newport was one of his physicians (Doctor Jonathan Sherwood the other). Later that same year, having regained his health, Sheldon re-enrolled at Union College, received his B.S. degree, and also became a member of Phi Beta Kappa fraternity. After a short, pleasant recreational trip to New York and Philadelphia, his health seemed much improved. In 1831, he began the study of medicine with Doctor Shadrach Vincent at Fairfield, N.Y. During the years 1831 to 1833, inclusive, he also studied botany, chemistry and medicine at the College of Physicians and Surgeons of the Western District of the State of New York, at Fairfield, locally called Fairfield Medical School. In 1809, the trustees of the Fairfield Academy had founded a medical school, which was granted a charter by the state legislature in 1812, as the College of the Physicians and Surgeons of the Western District of the State of New York. The first class had been graduated in 1816. By the time of Sheldon's attendance, the school was well established, and had a good reputation.[4,5,8,9]

The botany lectures Sheldon attended were given by Doctor Asa Gray (1810-1888), also a Fairfield graduate. It was in remembrance of these days, that years later, Sheldon bought a copy of Gray's much praised *A Manual of the Botany of the Northern United States*, 1848 (Figure 2). On the fly lead, below the price, $1.75, Sheldon wrote: "I



MANUAL OF THE

BOTANY

OF THE

NORTHERN UNITED STATES,

FROM NEW ENGLAND TO WISCONSIN AND SOUTH TO OHIO
AND PENNSYLVANIA INCLUSIVE,

(THE MOSSES AND LIVERWORTS BY WM. S. SULLIVANT,)

ARRANGED

ACCORDING TO THE NATURAL SYSTEM;
WITH AN INTRODUCTION, CONTAINING A REDUCTION OF THE GENERA
TO THE LINNÆAN ARTIFICIAL CLASSES AND ORDERS,
OUTLINES OF THE ELEMENTS OF BOTANY,
A GLOSSARY, ETC.

BY ASA GRAY, M. D.,
FISHER PROFESSOR OF NATURAL HISTORY IN HARVARD UNIVERSITY.

BOSTON & CAMBRIDGE:
JAMES MUNROE AND COMPANY.
LONDON: JOHN CHAPMAN.
1848.

Fig. 2 - Title page Asa Gray *A Manual of the Botany of the Northern United States*, 1848.

bought this Book because it was written by Asa Gray whose Lectures I attended at Fairfield Medical College about the year 1832 . . . P.S. It does not equal my expectations: still Gray was a good botanist. He loved this branch of study—"

The year 1832 was supposed to be Sheldon's year of travel and study at the Paris hospitals. An epidemic of Asiatic cholera in Paris made him change his plans. In October, he began a second course of lectures at the medical school. He received instruction in anatomy and physiology from James McNaughton, and on completion received certificate No. 165, dated October 30, 1833.

While Sheldon was in attendance at the school, there were a number of other prominent physicians on the faculty, who must have had considerable influence upon him. Doctor James Hadley (1785-1869),[10] was the Professor of Chemistry and Materia Medica from the school's first course of lectures, 1813 to its dissolution in 1840. For many years, Hadley was the only faculty member resident in Fairfield, and on him fell the responsibility of the tasks involved with the business managements of the College. Sheldon kept his college notes on Hadley's lectures, 1833. The more serious matters are interspersed with personal observations—for instance, "Puts his specs on." In the lecture on magnetism, Sheldon noted gleefully "His bowl leaks and water runs all over the table."

A professor whose reputation was more than local, and whose teachings probably influenced Sheldon's later career was Theodoric Romeyn Beck (1791-1855).[11] Beck and two of his five brothers earned distinction in the field of medicine. He was the author, in 1823, of the first authoritative book on medical jurisprudence published in the United States, a subject on which he had lectured at the Western College of Physicians and Surgeons at Fairfield from 1815. He continued to teach at Fairfield until 1840.

Doctor Westel Willoughby was not only Sheldon's Professor of Obstetrics during medical school, he was also one of his preceptors. In 1833 (January 30), Sheldon began to "read" with Doctors Coon and Booth, but after about three months he went to Willoughby at Newport, with whom he remained as a student-boarder until winter, when he returned to Fairfield to attend formal lectures again. Sheldon took his M.D. degree the 21st of January, 1834, one of 55 out of 217 University medical students who did so.

During the early years of his professional career, Doctor Sheldon was itinerant (Figure 3). He practiced in his native New York State until 1837 when he went to Ogle County, Illinois. Here he remained for almost three years, before going to Amanda, Ohio. At Amanda, he met and married Elizabeth H. Cullom (June 9, 1841). He continued to practice but was also engaged, for a short time, with his brother, George Washington, in a farming venture in Mercer County, Ohio, December, 1841. In April 1849, the family moved to another farm north of Celina, Mercer County.

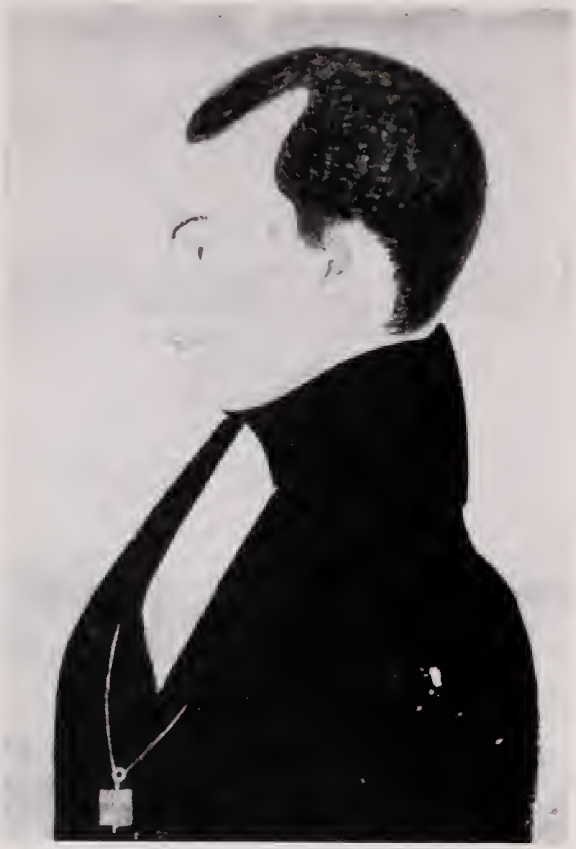


Fig. 3 - Giles J. Sheldon's profile, June 28, 1837, by J. DaSee.

Sheldon was a man who loved to travel. In his younger days, he once sailed on a coastal ship to Nova Scotia to see the tides in the Bay of Fundy.[5] In 1837, he and his brother George "commenced our tour of the West, walking across Ohio, Indiana, Illinois, and crossing into Iowa at Ft. Madison on December 1st." Late in life, Doctor Sheldon traveled to San Francisco, Oregon and Washington. The last entry concerning this kind of travel appears in his diary under the date October 9, 1876.

> —off to the Centennial. Arrived Philadelphia on 11th and 12th began the mighty show. Had $39.80 round trip

> ticket to Philadelphia and return by New York City, up the Hudson through Canada to Detroit, Chicago and home on October 23.

Elizabeth, Sheldon's wife, died May 8, 1850, and his son, Eugene Caleb, died May 10, 1850. Giles James, Jr. and Elizabeth were the surviving children of the first marriage. On November 19, 1850, he married Mrs. Margaret Roberts. Giles and Margaret Sheldon had five children: Celina A., Henry R., Sumner S., Florence N., and Julia A. Apparently, the practice of medicine and running a farm were not sufficient activity for Sheldon at this restless period in his life. Another interest was needed. In his copy of Blackstone's *Commentaries* (1847) he wrote: "I, James Sheldon, M.D. and A.B.—was admitted to the Bar as Attorney at Law and Solicator in chancery for the State of Ohio.

August 5, 1852
AEs. 46 years
Celina, Mercer Co.,—Ohio—"

One biographical comment notes that Doctor Sheldon was admitted to the bar "with the finest paper ever written before the examining Judge."[5]

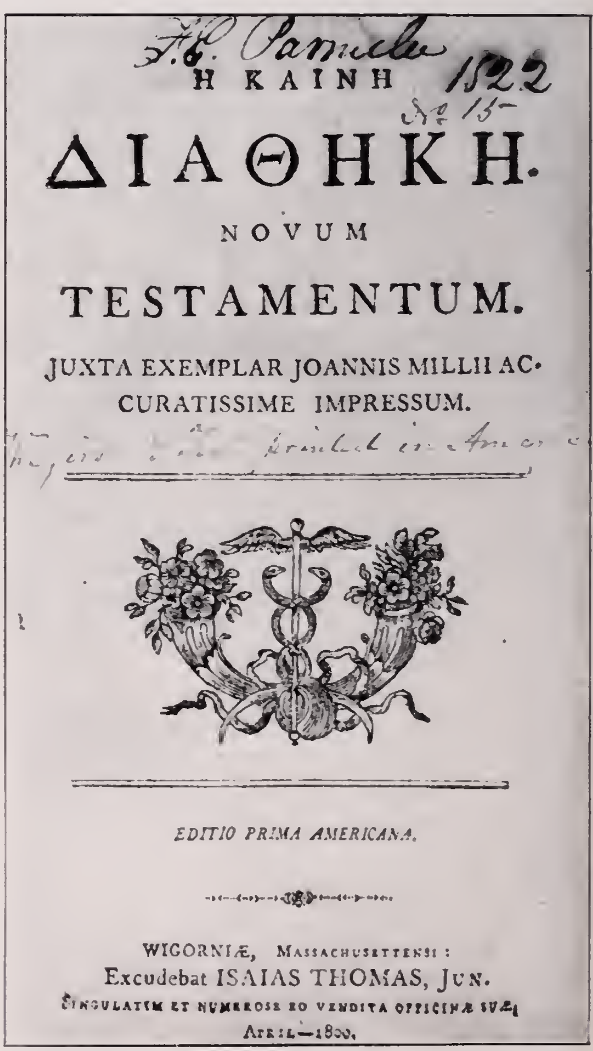
The next year, on April 28, 1853, the family of G. James Sheldon, Margaret Sheldon, his wife, Giles James Sheldon, Jr., Elizabeth Catherine Rebecca Sheldon and Celina America Sheldon started from Celina, Ohio for the West.

Four barrels of Doctor Sheldon's books were moved with them. His medical library was much larger than that of the average pioneer physician, and he had also kept the books he had used in his early educational years. Authors in his library whose works were presumably added before 1826 and from notes in books long enjoyed by him included Cicero, Horace, Tacitus, Virgil. The most interesting title in this group, acquired in 1824, was the first American edition of the New Testament printed in Greek, edited by Caleb Alexander, printed by Isaac Thomas, Worcester, Massachusetts, in 1800 (Figure 4).

Of course, many books acquired during his medical studies were of lasting value to a practicing physician in the 1850s-1860s. Some of the books bear notations of where and when they were purchased. Boyer's *French Dictionary*, 1827, was bought in the City of Utica, October 26, 1828, probably in anticipation of the journey to France that was never taken. Samuel Cooper's *A Dictionary of Practical Surgery*, 1830, was bought in the City of New York, 1831. The copy of John Murray's *A System of Materia Medica and Pharmacy*, 1828, has the inscription, Fairfield, 1831. The first volume of John Bell's *Anatomy of the Human Body* has a bookplate of Wm. Todd and date, 1835.

Doctor Sheldon enhanced his medical education throughout his life by continuing to buy and study the best and latest medical books available. Several editions of William P. Dewees' works on midwifery and diseases of females were added in the 1840s. These purchases probably demonstrated the frequency of obstetric and gynecologic problems in his patients.

His copy of the *Dispensatory of the United States of America*, was the fourth edition of 1839. Robley Dunglison's (1798-1869), *New Remedies: The Method of Preparing and Administering Them; Their Effects on the Healthy and Diseased*



F.C. Pamele 1822
H KAINH
No 15
ΔΙΑΘΗΚΗ.
NOVUM
TESTAMENTUM.
JUXTA EXEMPLAR JOANNIS MILLII ACCURATISSIME IMPRESSUM.
[illegible] printed in America

EDITIO PRIMA AMERICANA.

WIGORNIÆ, MASSACHUSETTENSI:
Excudebat ISAIAS THOMAS, JUN.
SINGULATIM ET NUMEROSE EO VENDITA OFFICINÆ SUÆ,
APRIL—1800.

Fig. 4 - Title page of New Testament in Greek edited by Caleb Alexander, 1800.

Economy and etc., 1841, was purchased in Cincinnati in 1854. Robert Gooch (1784-1830), *An Account of Some of the Most Important Diseases Peculiar to Women*, 1836, was also purchased in Cincinnati. Sheldon wrote on the fly leaf "a most admirable work." The four volume *The Cyclopedia of Practical Medicine*, edited by John Forbes, Alexander Tweedie, John Conolly, revised by Robley Dunglison, 1847, was being used in 1848, and was probably the closest Doctor Sheldon could come, in many cases, to a professional consultation on the Minnesota frontier. For example, May 4, 1868: "On my return from S. Anderson's where I was attending his wife, sick with ovarian abscess which I opened in Sacro-ischiatic notch—2 qts of Pus escaping." Several days later, he wrote that the "went to bed but could not sleep, too warm, couldn't stand it and got up, wrote this and then went to reading about Abscess in the *Cyclopedia of Practical Medicine*.

An incomplete, *The Philadelphia Medical and Physical Journal*, for 1804-1808 was the only periodical remaining in the Sheldon collection, although he always subscribed to at least one medical periodical as well as an Eastern newspaper. Books of purely recreational interest apparently were not included in this collection. Two works on botany, the book by Asa Gray and Robert E. Griffith's *Medical Botany*, 1847, were both read and used. Books of more general scientific interest included Josiah C. Nott's *Types of Mankind*, 1854, by Sheldon's former professor in theology at Union College, and Sir Charles Lyell's *Elements of Geology*, 1849.

Observations in Sheldon's journals show not only the relevance of his past professional training and reading to his continuing education, but also the persistent effort he made to keep informed. Jeremiah Day (1773-1867), professor of mathematics at Yale, was the author of a text on mathematics Sheldon studied at Union College. Sheldon read Hubbard's[12] account of the post mortem on Day, presented to the Connecticut Medical Society, 1868, with interest and insight, probably making comparison with his own experience. He quoted it in a journal entry in October 1868 headed Consumption.

> Jeremiah Day, . . . prof. Math, Yale College, was a feeble youth bled from the lungs, was bled, took digitalis, went to Bermuda, came home to die etc. But Doctor . . . cured him with Irons and Calisayo Bark and good living. He survived to the age of 95- . Post mortem examination: the chest: in the Apex of each lung was found a double corrugated circular cicatrix, an inch and a half or more in diameter. Also a third cicatrix on the left side of the left lung a few inches below the apex. The vomicae had been deep and of long duration. The active period was twelve years and its whole period 75 years. This is a legible record, surpassing in interest and importance to the human race those of the slabs of Ninevah or the Runic inscriptions. He was born in 1781 and died August 1867 - This is an important and encouraging case-

Two books from which Sheldon had studied law: Herbert Broom's *A Selection of Legal Maxims*, 1852, and the 21st edition of Sir William Blackstone's *Commentaries on the Laws of England* (adopted to the work of the American student by John L. Wendell 1847) must have been of great practical importance to him. During the first years of his residence in Minnesota, Sheldon gave his neighbors legal counsel and advice, without fee. He also made use of his experience in surveying. As a result, according to his grandson, Houston County was remarkably free from political quarrels and factional feuding that often mars the first steps to organized county government. On April 4, 1854, Sheldon was elected the county's first Judge of Probate and also served as presiding judge of the first court at the county seat. He was several times a County Commissioner, Court Commissioner and County Coroner. He also "surveyed, and platted . . . the village of San Jacinto, and helped to secure for it a post office, and in the same period of the fifties he platted the village of Sheldon, in Sheldon Township"[5] (Figure 5). Doctor Sheldon treated George Canon, San Jacinto's first postmaster, during a long illness. When Canon found he could no longer carry on his responsibilities as Postmaster, he simply turned everything over to Sheldon who took the few stamps, etc. home and "acted as a sort of Deputy." In time, Doctor Sheldon was appointed to the office and served until the San Jacinto Post Office closed January 19, 1871.

This then was the educational and cultural background of the man contentedly reading his medical books in 1867. His journals, or as he called them, memorabilia, covering years December, 1853-

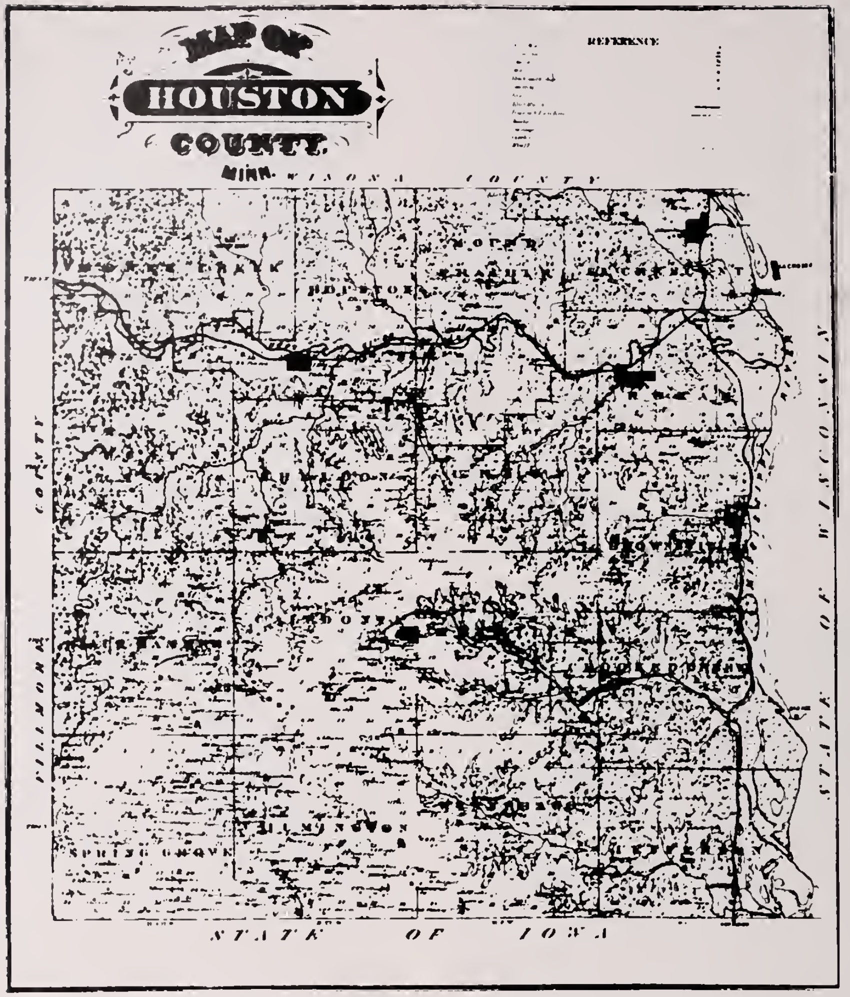


Fig. 5 - Map of Houston County, Minnesota. In An Illustrated Historical Atlas of the State of Minnesota. Chicago, A.T. Andreas, 1874. p. 148.

January 1869, show an educated, able individual, admirable in energy, courage and ingenuity, well established in his triple career as farmer, judge and physician. Management of the family farm is the predominant interest in his journal entries, which detail the extremes of weather, conditions of the crops, prices received for the produce. For some years, especially those of the Civil War, Sheldon did not practice on a regular basis. However, his response to the obligations of his first profession, regardless of difficulties or unpleasantness, was impeccable. And as his sons from his second marriage matured and took over farm responsibilities, he saw more and more patients.

Some of Sheldon's comments on current events are of great interest still. One of the most stirring events of Minnesota pioneer history was the Sioux uprising, which began August 15, 1862. There was a strange ripple effect of this in Houston County. Sheldon termed it Strange Incident!

A.D. 1862
Strange Incident!

September 2nd (Tuesday)

Yesterday, Sept. 1st, a panic of a serious character filled the road with ox and horse wagons filled with terror. Stricken men, women, and children many also without hat or coat hastened on intent on self preservation.

I inquired the cause they said the Indians (2,000 or more) had burned Preston in Fillmore Co. Minn. and after murdering all the people for miles, and were then not far from Houston (6 miles above us) and were pouring into Sheldon.

> They said the danger was great. I hastened to the house and ordered Ma and the children to join the multitude and hasten on towards Hokah and La Cross. Poor creatures how sad to leave our house and all we possessed to the knife and the firebrand.
>
> We took some bread and cheese and a few clothes with $30 to $40 of money and commended ourselves to providence. Libby was on the hill teaching school I sent a horse for her and to get news.
>
> D.G. North went.
>
> When they returned they harnessed to the wagon, filled it with beds, clothes and oats, cheese etc. and started for Hokah. Libby and Orren (our hired boy) met me on my return. I went with them to Mr. Woolleys where my wife and children were. In the evening we started for La Cross in Wis. but fortunately met two teams of wheat from Riceford 30 miles west towards Preston. They (one the P.M. of Riceford) assured us it was a hoax got up by two wretches for some vicious purpose.

The years immediately before and during the Civil War were very difficult for Sheldon. He had great sympathy for the Negro slaves and held a deep antagonism to the southern slave owners. He was often indignant with the politicians in Washington. In 1861 he questioned: "Is Lincoln fool, coward or traitor? I believe him unequal to the requirements of his station." In 1863 he proclaimed, "I am a *war* democrat to the last ditch!"

On February 28, 1862, G. James Sheldon, Jr. enlisted as a volunteer in Company I of the Wisconsin Cavalry. Months passed before the family heard anything from Jimmy, although they knew the company had been in action in Arkansas during August. On October 12 they were overjoyed to have him come home on leave unannounced. They were shocked at his physical condition. Four months out of the eight he had been sick. "Benton Barracks," his father wrote, "has nearly taken his life. He has chronic diarrhea and chronic bronchitis." Jimmy's subsequent military career was not recorded by is father, except for a note in his journal dated 1863: "Dec. 16 & 17th are hard winter days. Snow from the NE & N with heavy wind fell 12 inches deep, 16' below 0. Jimmy is away to Rochester to get exempted from the draft if he can on account of ill health. He has not recovered from his first campaign." Beginning in May, 1863 Doctor William Worrall Mayo (1819-1911) was the examining surgeon of the enrollment board for the First Minnesota District. If Doctor Mayo examined Jimmy Sheldon (and this is just a possbility) that was the only contact with Rochester, (and indirectly with Mayo) in the memorabilia. The outcome of the examination is unknown. Jimmy did survive the war, however, and eventually became a railroad locomotive engineer.

There is surprisingly little specific detail in the journal about Sheldon's practice of medicine—only modest, rather short accounts. But succinctness of description does not lessen vitality: Entry dated September 7th (1868) reads:

> When I got home I found a messenger had come for me in the morning to go to Preacher Smith's to consult with Doctor Pope as to the treatment of a compound fracture of said Smith's right leg—Tibia and fibula both broke 6 in. above the ankle—the fibula having cut through the integuments, stocking and boot. He had lain 17 days and the bones not set—the limb gangrenous in spots from pressure of knot and strings, etc. I remained over night and worked over the limb till 4 p.m. of the 7th when it looked better anyhow.
>
> I used the *spica* bandage etc. Pope had at first put the limb into a box or trough made of three boards. The heel had suffered and Smith could not bear the pain. And the box had to be discarded.

Sheldon was conventional in his methods, and followed therapies and procedures that he had been taught. He defended the practice of bleeding, as parts of his defense against the irregular practitioners. He used the standard medicines of the day. However, the few cases reported seem to show a conservative approach; radical or depletion methods were not used. For instance, this entry sounds like a means of reinforcing his own opinion: "Calomel is not better than Bismuth or Magnesia for sores—Tannin acts *well* as a dry remedy."

Doctor Sheldon's most effective therapy must have been the reassurement of his presence. He gave this generously. It was commonplace, according to his journals, for him to stay overnight, several days or longer, with one of his patients. His professional fees for this were modest. In 1861, he stayed in with a patient from November 22 to December 2. The total charge was $25.00 for everything.

In August 1868, he noted "On the 13th I was called in night to visit Mrs. John Crich—gone two nights and two days." The succeeding entry makes it plain that this absence must have been right in the middle of the wheat harvest. Sheldon did not mention this, but on the same page wrote: "My sons, Henry and Sumner, are fine, good, industrious boys"—obviously knowing himself fortunate to have such help.

What might have been partially personal dismay at his incapability of giving relief is sometimes released in peppery comment about poor treatment.

> June 1st 1868. I went or was carried 16 miles through a heavy rain storm to see Mrs. S— one of Doctor Pope's patients, sick 3 ms with inflammation of the left eye. It is now staphylomatous.
>
> It was considered neuralgia and treated badly. By such management she has now colitis and stomatitis and in Brain.
>
> Know what the complaint really is before you open fire.

In his written remarks, he was free to voice his *skepticism* for some therapy. For example:

> Jan. 5 Typhoid Fever. Rheumatism
>
> By medical treatment—one in Six dies—By no medication, only ventilation, food or nursing, one in sixteen dies. Rheumatism gets well quicker without medicine.

Much of Doctor Sheldon's practice must have been grim as the following illustrates:

> Jan. 7, 1869 (under heading: VARIOLA) In one month (December 1868) in Cincinnati there were 530 deaths. Of these 187 were found Small Pox!
>
> Small Pox is prevailing now around and in Rushford, Fillmore County, Minnesota and already, I'm told, 37 have died. No wonder: they drink great quantities of whiskey before and during the disease.
>
> It is a popular belief that drinking is a preventative.
>
> The Norwegians live in houses so tight that air is almost excluded and light is admitted only through one window. They roll up in woolen blankets—and keep their room (for generally there is but one) hot as a big stove can make it. I have now a family in which 5 or 6 are down with Small Pox (In Crystal Valley, Gunderson family—One I fear will die—delirious, eyes closed, etc.)

There was later added: "she died choked." A few pages further on the somber report is continued:

> Small Pox
>
> P.S. I have just returned from visiting Mr. Gunderson and family in Crystal Valley. I found 4 down with *Small Pox*—covered with pustules and vesicles from head to heal— One of the family caught it at Rushford about the 20th Dec. Ult. Keep cool, dark, abstain from meat, smear with oil (olive); use expect for cough and [cumifucfig racemoso?] if the symptoms became severe. Give freely of sulphuric acid, largely diluted with water—13 to pint of sweetened water if the case is confluent—pocks filled with bloody sanies

Sheldon felt no guilt about maintaining his Anglo-Saxon protestant attitudes. These were perhaps colored by relationships both medical and legal in his cases.

> January, 1869.
>
> These Christmas and New Years celebrations among the Irish and Norwegians have been rendered extremely interesting and happy by the free use of knife, fist and foot— Beer and whiskey have raised the Devil among them and now the Law is invoked by the sore heads to pour Oil into and over their bruised faces and kicked ribs— One came to me for a warrant—which I have not yet issued— His face looked like a roten (sic) pumpkin— Alcohol is

> King and the Devil is prime minister—Man does seem to be totally depraved and will soon end in smoke.

Some of his journal entries are very vivid, sounding like a stream of consciousness, and recall his earlier intention to become a minister.

On the 5th of August at sunset a magnificent ball of fire passed over the farm and exploded in a terrific crash. Doctor Sheldon wrote "This is the month for the thunderstorms to visit the earth."

And for the next evening he wrote:

> There! See, the rain is coming! Hurry Henry, Sumner, let us get another load of wheat—if we can top off this stack, then we will have *one* safe. We did hurry, got the load and finished the stack and began another. But the rain stopped us and the heavens are all covered with clouds and it rains, rains as if a night rain were setting in. Pretty condition our wheat and oats will be in! Lose half of it very likely and at the best it will have to be saved by the labor of opening shocks, setting up the down bundles, fussing, mussing, toiling, moiling, soiling, sweating, fretting, declaiming, and some thoughtless ones swearing. This is farming! Virgil calls it a happy life! I can't see it.

In spite of few personal remarks, Doctor Sheldon left in his journals, a vivid impression of a strong personality. Nevertheless, he was conscious of limitations. He was in his early sixties, an advanced age for the frontier. Flashes of despondency or questioning are found. He was ill more often.

He very intelligently wondered (January 25, 1869) if his excessive use of tobacco could be the chief cause of medical troubles. "But" he asked "how can I give it up? Have used it since six years of age."

For May 24, 1868, 12 days after his 62nd birthday, he wrote:

> This evening I lost my first incisor tooth—the right middle one, lower jaw. My front teeth up to this time had shown few signs of age. But now the mark is palpable. This tooth had been loose for probably two years and I spared and saved it. Now I fear for the rest. This is the Beginning of the End.

Doctor Sheldon's journals record his pulling of many teeth. "He used forceps very like modern tools, and in cases where there wasn't enough tooth left to provide a grip for forceps, he used an instrument called a turnkey. This turnkey looks just like a very small cant hook, such as loggers used to turn logs."[5] Later entries in the journals on this subject note:

> February 24, 1871, An old Indian (Winnebago), to extracting bicuspid teeth, $.25. Credit, gift. He did flinch — yelped.
>
> April 2, 1872, Indian Joe's (Winnebago) wife with her papoose came to my house this morning to get me to extract a molar tooth, lower jaw, right side. I cut around, hooked on, and tore out two instead of one. Gum held them together. It bled profusely. An Indian woman does feel, it hurt her. I gave tobacco and she started for her wigwam in the timber.

In October (1868), upon receiving news of the death of Hejah Mann, an admired friend of Fairfield days, and fellow member of the Calliopean Society, he wrote: "They are all passing away - these men of my youth."

In early December, 1868, he wrote "I am sick and have been for more than a week. Bil. Rhumen and chills, fever, can't sleep. Nursing the sick the cause." By December 7 he was beginning to feel better. "My health is mending. I began to sleep and have hopes of recovery." But it continued very cold, with deep snow on the ground, and he wrote: "How we long to escape from this inclement weather and climate."

Sheldon's professional services were needed in even the bitterest weather. On January 1, 1869, he dined at the Pope's and enjoyed a good supper and "two fine apples." The next morning, Doctors Pope and Sheldon drove 13 miles to Wm. Garret's—on whose wife, Sheldon "performed the operation of Paracentesis Abdominus, two inches below umbilicus, through 4 inches of Adeps and got 10 qts. greenish yellow fluid—looked like boiled milk. She fainted but soon recovered and bore the pain like an Indian—had to give freely of Wine - Had old liver and stomach troubles— Often vomited blood (haemotomicus) 60 years old—will not recover poor woman! Wishes to live, to return to Ohio. The sods of Minnesota, however, will soon gain the victory." Sheldon continued: "I charged only $12 and he paid me joyfully, thankfully—"

He included a note on technique to himself.

> N.B. Look to your Trocar before you begin and see that there is no part of the Canula above the shoulder of the steel point— It will *not* pass through the skin if there is— Mine caught and I had to file the canula down to the shoulder of the steel.

He concluded the entry with personal encouragement:

> I had been sick five weeks and was so weak my limbs could scarcely hold me up—but I grew stronger and did not falter, and after visiting Mrs. Backer with Pope and staying up all night with her—got home at 4 p.m. of the 3rd better than when I left home. Spunk is good medicine at the right time!

This is a *truism* that each generation of physicians rediscover. Doctor Sheldon's spunk carried him through until May 25, 1880 when he died at age 74. He was buried on his farm.

Doctor Giles James Sheldon, a "backwoods doctor" on the Minnesota frontier deserves the attention given him in our review. He was a man of intelligence, personality, character, versatility, was well-educated, possessed good professional skills for his day, was active in the public life of his community, had ability and above all "spent the coins of his life and talents" in the unfailing consideration of the sick and distressed. He was a valuable asset to southeast Minnesota!

Acknowledgment

Sumner Seward Sheldon, Jr. and his wife Ruth (faithful guardians of history) generously donated Doctor Sheldon's many diaries, account books, professional books, letters and instruments of historical interest and value to the Mayo Medical Library. Their stewardship of these materials made this review possible.

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Thoracic and Cardiovascular Diseases
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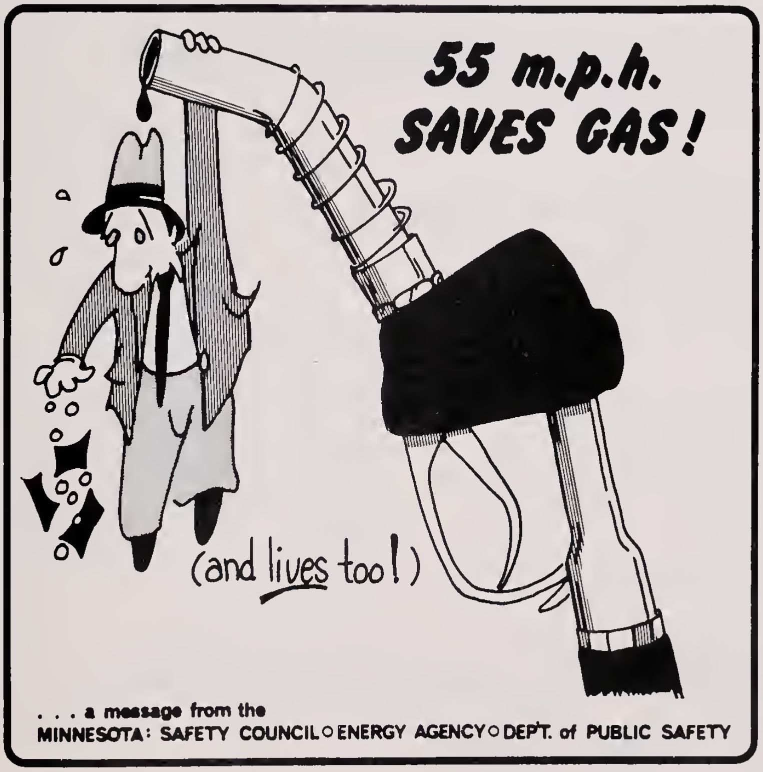

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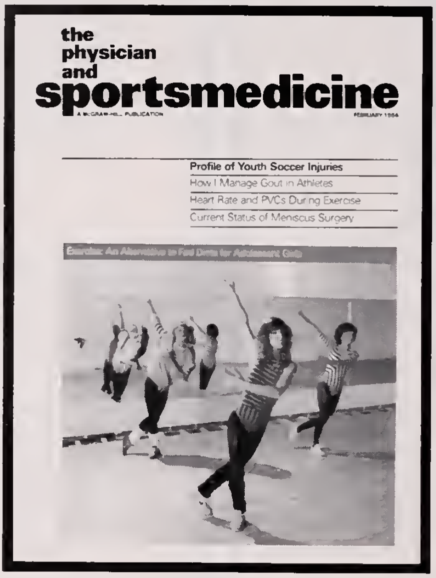

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Rheumatology Corner

Aches and Pains and Thyroid Disorders

GERALD MULLIN, M.D.*

Arthritic syndromes occur commonly with disorders of thyroid function. Most frequently they occur with hypothyroidism and can represent an interesting diagnostic challenge to the clinician. Less often, aches and pains are a part of hyperthyroidism but are frequently overshadowed by other physical signs of thyroid excess. Fairly common diseases such as rheumatoid arthritis and systemic lupus erythematosus can occur with a goiter and hypothyroidism, perhaps representing a similar etiology or genetic predisposition. It is difficult to judge the frequency of thyroid induced arthritic syndromes, but a primary care physician sees them often enough to be aware of them.

In myxedema, crampy muscle stiffness and aching is fairly frequent. It comes about probably because of the deposition of hyaluronic acid and other mucoproteins in muscles, tendons and joints. Perhaps it is brought on by excesses of thyroid stimulating hormone. When the TSH level is low in hypopituitarism, the muscle distress is less. Slow muscle relaxation after contraction is a commonly recognized sign of myxedema and is the basis for the photomotogram test which was commonly used in the 1950s before more sophisticated assays of thyroid hormone were developed. Direct percussion of the muscle can show "myoedema" or ridging of the muscle which persists for several seconds. Muscle bulk is usually normal or infrequently can be increased. The electromyogram can pick up irritability in a fairly specific pattern abnormality. When hypothyroidism is present for a long period of time, muscle weakness can occur and on biopsy, atrophy of Type II muscle fibers has been demonstrated. Elevated levels of creatine phosphokinase (CPK) accompanies this decrease in Type II fibers. Muscle abnormalities return to normal with thyroid hormone replacement.

Joints can swell with effusions containing low grade inflammatory fluid. Knees and small joints of the hands and feet are frequently involved. Perhaps it is related to hyaluronic acid penetrating the synovial membrane. Occasionally, crystals such as calcium pyrophosphate can be found in joint fluid, causing more marked inflammation. It has been reported that serum uric acid levels are frequently elevated in myxedema, but actual gouty inflammation in joints is rare.

Carpal tunnel syndrome is seen in 7% to 10% of patients with myxedema. It is caused by either direct infiltration of the median nerve with mucinous material or by swelling of the flexor tendons with hyaluronic acid deposition. Relief of the paresthesias comes slowly with thyroid hormone replacement. For severe symptoms of carpal tunnel syndrome, often immediate relief is given by the injection of a steroid preparation in the carpal tunnel. The carpal tunnel in this situation feels different to me when putting in a needle, with a firmer feel. Some patients with myxedema present with a more diffuse painful sensory neuropathy, again due to nerve degeneration with mucinous infiltration.

Autoimmune thyroiditis, or Hashimoto's thyroiditis, is now the most frequent cause of hypothyroidism. It seems to be increasing and the patient recognized follows a similar pattern. It is usually a young woman presenting with fibrositic aches and pains and morning stiffness and a goiter which is painless to examination. No synovitis is found on exam and physical findings are those of fibrositis. She, however, has a high sedimentation rate and often a positive antinuclear antibody. High titers of thyroid antibodies are found. The thyroiditis can be accompanied by a similar destructive process in the adrenal gland causing hypoadrenalism presenting with weakness and aches and pains. Thyroiditis, of course, can coexist with rheumatoid arthritis, systemic lupus erythematosus or Sjogren's syndrome, and sometimes represents a diagnostic dilemma. The best way to make a diagnosis of systemic lupus erythematosus is to carefully add up the criteria for SLE. At times, the answer comes only with observation over a long period of time on thyroid hormone replacement. There is a growing awareness of the many faces of Sjogren's syndrome, with thyroid disease from lymphocytic infiltration of the gland.

Hyperthyroidism brings fewer diagnostic problems. Muscle weakness, especially quadriceps weakness, is common. The patient frequently cannot arise without assistance from a squatting position. Henry Plummer at the Mayo Clinic made a diagnostic test by raising the height of the first step on the exam table. He then noted the difficulty that the hyperthyroid patient had in climbing onto the table.

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*Rheumatologist, Minneapolis.

Much is written about thyroid acropachy in the literature, but I have failed to recognize a case in 20 years of private practice. It comes about a year after thyroidectomy or radioablation for Graves' disease and consists mainly of inflammation or periostitis of the fingers and toes associated with clubbing. Treatment of this condition is said to be unsatisfactory but thyroid hormone and prednisone are usually tried.

Arthritic syndromes with thyroid dysfunction are interesting to find and quite rewarding to treat with a simple inexpensive medication.

Rheumatology Symposium 1985
Minnesota-Great Britain

Minnesota Medical Association's Resource Group on Rheumatic Diseases

Place: Mayfair Hotel, London, England

Date: November 29-December 8, 1985

Contact: Eugenia C. Kassar, Minnesota Medical Association, 2221 University Avenue, SE, Suite 400, Minneapolis, Minnesota 55414.
612/378-1875

Sixth Annual Seminar for CME Directors
Minnesota Medical Association

Place: Spring Hill Center, Wayzata

Date: November 15-16, 1985

Contact: Eugenia C. Kassar, Minnesota Medical Association, 2221 University Avenue, SE, Suite 400, Minneapolis, Minnesota 55414.
612/378-1875

Cover Photograph
Minnesota Whirlwind

The cover photograph was recorded shortly before sunset along the southwestern shore of Lake Mille Lacs, July 3, 1985, by Dr. Arthur Bearon. The tornado had struck the town of Garrison about 15 minutes earlier and was moving eastward across the lake, forming a waterspout. The dramatic effect of the photo is heightened by the fact that the sun is shinning in the west, whereas the eastern side is almost blackened.

Dr. Bearon is a practicing obstetrician-gynecologist with John A. Haugen Associates in Minneapolis. A native of Massachusetts, he graduated from the University of Minnesota School of Medicine in 1965 and took his postgraduate training at the University. He has been in private practice since 1973.

Dr. Bearon has had no specific photography experience. For this particular photo, he was lucky enough to be in the wrong place at the right time, carrying a camera. The picture was taken with a Minolta-XGM camera utilizing a 200-mm telephoto lens and ASA 100 film.

Minnesota Medical Association

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Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

SEPTEMBER, 1985

4 **Geriatric Endocrinology;** University of Minnesota; Hennepin County Medical Center, Minneapolis; CONTACT: University of MN, Office of CME, Box293 Mayo, 420 Delaware St., S.E., Minneapolis, MN 55455; 612/373-8012.

5-6 **Annual Conference for Nursing Home Med. Directors;** University of Minnesota; Health Sciences Center, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

6 **Update on Lipid Disorders;** University of Minnesota; Willey Hall, West Bank Campus, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

6-7 **Physical & Sexual Abuse of Children;** Minnesota Medical Association, MN Chapter, American Academy of Pediatrics and the Minnesota Academy of Family Physicians; Minneapolis Marriott; CONTACT: Eugenia C. Kassar, MMA, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

7 **Minnesota Society of Anesthesiologists Fall Meeting;** Minnesota ociety of Anesthesiologists; L'hotel Sofitel, Minneapolis; CONTACT: P.A. Southorn, M.D., c/o MN Society of Anesthesiologists, 200 1st treet S.W., Rochester, MN 55905; 507/286-8701.

7 **Shoulder Ultrasonography;** University of Minnesota; University Hospital; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

-20 **Third Annual Grad. Occupational Health & Safety Institute;** chool of Public Health & Office of CME; Continuing Education and xtension, University of Minnesota; and Midwest Center for Occupational ealth and Safety; Earle Brown Center, University of MN, St. Paul; ONTACT: Ruth K. McIntyre, Director, Continuing Education, Occu- ational Health, St. Paul-Ramsey Medical Center, St. Paul, MN; 12/221-3992.

0-11 **Management of Alzheimer Patients;** University of Minne- ta, Geriatric Research, Education and Clinical Center, VA Medical enter; Willey Hall, West Bank Campus, University of MN; CON- ACT: University of MN, Office of CME, Box 293 Mayo, 420 elaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

2-21 **Advanced Cardiac Life Support (ACLS) Certification/ certification;** Methodist Hospital; St. Louis Park, MN; CONTACT: an Peterson, RN, Methodist Hospital, 6500 Excelsior Blvd., St. Louis rk, MN 55426; 612/932-5419.

2-13 **Cardiology Update;** Abbott Northwestern Hospital; Holi- y Inn, Grand Rapids; CONTACT: Sarah Ventres, Education Dept., bbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 407; 612/874-4300.

13-14 **Current Controversies in Adolescent Mental Health;** University of MN; Willey Hall, West Bank Campus, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

14 **Advances in the Control of Infectious Diseases;** University of Minnesota; Radisson University Hotel, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

14 **A Workshop in Practical Cardiology;** Mayo Clinic/Mayo Foundation; Marriot's Lincolnshire Resort, Lincolnshire, IL; CONTACT: William L. Neitz, Mayo Clinic, 200 First St. SW, Rochester, MN 55905; 507/284-2085.

17-20 **Pediatric Radiology;** University of MN; Willey Hall, West Bank Campus, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

18 **Lederle Symposium: Stress Management for Health Care Professionals;** Minnesota Medical Association & Minnesota State Pharmaceutical Association; Hyatt Regency, Minneapolis; CONTACT: Eugenia C. Kassar, Director CME & Meeting Services, MMA, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

19-21 **Trauma and Critical Care Seminar;** University of Minnesota & Hennepin County Medical Center; Hennepin County Medical Center, CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

19-21 **Pulmonary and TB Update;** St. Paul Ramsey Medical Center; Radisson Plaza Hotel, St. Paul; CONTACT: Ruth K McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

19-21 **Challenge of the Lumbar Spine;** Abbott Northwestern Hospital; Amfac Hotel, Minneapolis; CONTACT: Charles Burton, M.D., 2727 Chicago Avenue, Minneapolis, MN 55407; 612/874-4470.

20 **Advanced Concepts in Cardiac Pacing;** Abbott Northwestern Hospital, Minneapolis Heart Institute; Radisson Metrodome, Minneapolis; CONTACT: Sarah Ventres, Education Dept., Abbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

22-24 **Heart Attack Prevention Workshop;** University of Minnesota; Wilder Forest Conference Center, Stillwater; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

27 **Northwestern Pediatric Society Annual Meeting;** Northwestern Pediatric Society; Thunderbird Motel, Bloomington; CONTACT: James G. Cardle, M.D., 7250 France Ave. So., Edina, MN 55435; 612/831-4454.

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(September continued)

27 **Behavioral Aspects of Primary Care**; The Duluth Clinic, Ltd; Fitger's by the Lake, Duluth; CONTACT: James G. Brueggemann, M.D., 400 E. Third St., Duluth, Minnesota 55805; 218/722-8364.

27-29 **Minnesota Society of Neurological Sciences Annual Meet-ing**; Minnesota Society of Neurological Sciences; St. Paul Hotel; CON-TACT: David G. Piepgras, M.D., Mayo Clinic, Dept. of Neurosurgery, ochester, MN 55905; 507/284-3331.

OCTOBER, 1985

2-3 **Tenth International Symposium on Intestinal Microecology**; niversity of Minnesota, Mayo Auditorium, U of M; CONTACT: niversity of MN, Office of CME, Box 293 Mayo, 420 Delaware St. .E., Minneapolis, MN 55455; 612/373-8012.

-5 **Comprehensive Two-Dimensional & Doppler Exam of Con- enital Heart Disease**; Mayo Clinic/Mayo Foundation; Mayo Clinic; ONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W., ochester, MN 55905; 507/284-2085.

-5 **Current Concepts of Cardiology**; Abbott Northwestern Hospi- l; Holiday Inn, Willmar; CONTACT: Sarah Ventres, Ed. Dept., bbott Northwestern Hospital, 800 E. 28th St., Minneapolis, Minne- ta 55407; 612/874-4300.

National Agenda to Promote Continence; Abbott Northwestern ospital, CME; Radisson University Hotel, Minneapolis; Contact: arah Ventres, Ed. Dept., Abbott Northwestern Hospital, 800 E. 28th ., Minneapolis, Minnesota 55407; 612/874-4300

-12 **Principles of Colon & Rectal Surgery**; University of Minne- ta; Mayo Auditorium, U of M; CONTACT: University of MN, ffice of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, N 55455; 612/373-8012.

1-12 **Metabolic Exercise Testing;** University of Minnesota; Rad- on South Hotel; CONTACT: University of MN, Office of CME, x 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/ 3-8012.

2 **Symposium on Psychiatric Issues; Abbott-Northwestern Hospi-** ; Radisson South Hotel; CONTACT: Sally Ventres, Abbott-North- stern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874- 00.

6-18 **Internal Medicine Review**; University of Minnesota; Mayo uditorium, U of M; CONTACT: University of MN, Office of CME, x 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/ 3-8012.

7-18 **Practical Toxicology: Health Concerns & Legal Issues in e Workplace**; St. Paul Ramsey Medical Center; Earle Brown ntinuing Education Center, St. Paul; CONTACT: Ruth K. cIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, N 55101; 612/221-3980.

7-19 **11th Annual Meeting "Focus on the Adolescent;"** Minne- ta Perinatal Organization; Radisson Duluth Hotel, Duluth; CON- CT: Pam Lindberg, MMA, 2221 University Avenue SE, Suite 400, inneapolis, Minnesota 55414; 612/378-1875

18-19 **Ophthalmology in Primary Care**; University of Minnesota, Saint Paul Hotel; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

20 **Insulin Therapy: An Update**; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W., Rochester, MN 55905; 507/284-2085.

20 **OB-GYN for Family Physicians**; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W., Rochester, MN 55905; 507/284-2085.

21-23 **Clinical Reviews**; Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W., Rochester, MN 55905; 507/284-2085.

25 **Regional Conference on Angioplasty**; Abbott Northwestern Hospital; Minneapolis Plaza Hotel; CONTACT: Sarah Ventres, Education Dept., Abbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

25 **E. T. Bell Fall Pathology Symposium: Endocrine Pathology;** University of Minnesota; Radisson University Hotel; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

26 **Third Annual Clinical Review for Physicians** - 1985 - Thoracic Cardiovascular Surgery; Drs. Gannon, Lindberg, Satterfield & Anderson: Hyatt Regency, Minneapolis; CONTACT: Evan F. Lindberg, M.D., 2545 Chicago Avenue, Suite 611, Minneapolis, Minnesota 55404; 612/871-4771.

25-26 **Practical Gastroenterology**; Abbott-Northwestern Hospital, Minneapolis Plaza Hotel, CONTACT: Sally Ventres, Ed. Dept., Abbott-Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300

26 **Fall Seminar**; Minnesota Society of Clinical Pathologists; Radisson University Hotel, Minneapolis; CONTACT: Pam Lindberg, MMA, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

30 **Options in Cardiovascular Medicine**; University of Minnesota; Radisson University Hotel, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

31-November 1 **Latest Trends in Patient Management—Radiology and Urology**; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel; CONTACT: Ruth K. McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

NOVEMBER, 1985

14-16 **Annual Primary Care Medicine Update**; St. Paul-Ramsey Medical Center; Radisson Plaza Hotel; CONTACT: Ruth McIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, MN 55101; 612/221-3980.

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MONTANA FAMILY PRACTICE: Have the best of both worlds. BE/BC Family Practitioner needed to establish a Department of Family Practice as part of The Billings Clinic — a 62 physician multispecialty group. Enjoy practice with or without obstetrics in a regional medical center with subspecialty backup and the cultural advantages of good schools, art, drama, symphony orchestra, etc. You and your family can enjoy the wide open spaces together. There is riding, fishing, hiking, skiing, hunting, canoeing, to name a few. This is a delightful place to raise a family. Salary leading to partnership. Contact Paul B. Hoyer, M.D., The Billings Clinic, P. O. Box 35100, Billings, MT 59107-5100, (406) 256-2500.

MINNEAPOLIS AND SUBURBAN practice of 10 family physicians seeks eleventh Board Certified or eligible family physician to join group or locum tenens. Major hospital affiliation, three practice sites. Direct inquiries to Dr. Youmans or Mr. Nickolay, 1206-42nd Avenue North, Minneapolis, MN 55412, (612) 522-6601.

Wanted: Family practitioner, OB/GYN. Group practice. Central Minnesota. Starting salary $45,000. Write Minnesota Medicine (755), 2221 University Ave. S.E., #400, Minneapolis, MN 55414.

Psychiatrist to join progressive multi-specialty group of 61 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: John P. Merickel, M.D., 101 Willmar Avenue, Willmar, MN 56201.

S.E. Minnesota Family Practice opportunity: Solo fee for service. Family Practice is alive and well in S.E. Minnesota! Established Family Practice in town of 2,000. Nearby generalists and hospital. Willing to set up right person; OB optional. Weekend and night coverage. Call Jeff Robertson, Administrator, Zumbrota Community Hospital (507) 732-5131, or Robert Thompson, M.D. (507) 732-7331.

Family Physician - Four man Family Practice group needs to replace two leaving partners. Board eligible or certified desired. One year salary with partnership thereafter. Would also consider longterm locum tenens. Small town in Central Minnesota Lakes area. Unopposed Family Practice Clinic, 150 bed Regional Hospital at Brainerd, 100 bed Nursing Home, rotate calls. Call or write C. R. Pelzl, M.D., Pine River Medical Clinic, Pine River, MN 56474. (218) 587-4416.

FEE ONLY FINANCIAL PLANNING: A first rate financial advisor must be both impartial and knowledgeable. Fee-only financial advisors do not sell products or accept commissions, and can thus be impartial in making recommendations about taxes, investments, retirement and estate planning, and other financial issues. Fee-only advisors will work alone or together with other professionals. In Minnesota call Michael Helffrich, CFP, at PFP Advisory, Inc., 5100 Edina Industrial Blvd., #220, Edina, MN 55435, (612) 835-6601.

Family practice oriented multi specialty clinic in Metropolitan Minneapolis seeks associate in Family Practice with interest in Obstetrics. Contact: Jack Harrold, 3809-42nd Avenue South, Mpls., MN 55406, Phone: 612-721-6261.

Twelve-physician multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

Family practice opportunities — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

Minnesota, Duluth: Emergency Medicine Physician wanted to fill vacancy in St. Luke's Hospital EMS Regional Trauma Center, with 19,000 annual ED volume. Fee-for-service corporation with negotiable first year salary and then full partnership. Prefer physician ABEM certified or eligible with interest in teaching in local ATLS, ACLS, and FP residency. Send CV to Physicians Emergency Service, Ltd.- 915 E. 1st St., Duluth, Minnesota, 55805. (218) 726-5212.

Growing West Suburban Lake Minnetonka Clinic adding one full time family practitioner and one full time internal medical physician. Multi-Specialty: Family Practice, Internal Medicine, OB/GYN, Surgery, Orthopedics, Urology, Ophthalmology. Fourteen physician clinic. Three offices. Quiet rural area, allowing easy access to downtown Minneapolis. Immediate interviewing. Forward curriculum vitae to: Mound Medical Clinic, Ltd., 2208 Commerce Blvd., Mound, MN 55364, Attn: Diane Theis, (612) 472-1144.

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Internist - East Range Clinics, Ltd. seeks an Internist with special interest in cardiology, pulmonary medicine or intensive care. Opportunity to enter established practice with progressive multispecialty group of 26 physicians including five Internists. Unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

General Internist needed to join group of four in Southdale, Burnsville area, Minneapolis. Immediate openings. Call Lowry Medical Associates. (612) 920-4833.

Family Physician BC/BEto join solo practitioner in Southwest Metro Area. Guaranteed salary plus fringe benefit package. Contact Samuel C. Shield (C1549), Minnesota Medical Service Corporation, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414.

Board Certified Radiologist, 33, seeks position preferably in North or Central Minnesota. Fully trained in angio, CT, ultrasound and nuclear medicine. Strong interest in breast imaging. Currently Chief of Radiology in 3-man 150-bed USAF Hospital. Available July 1, 1986. 25380 Los Palomas, Sunnymead, Calif. 92388. Home: (714) 924-2575. Work: (714) 655-5209. Community-minded wife and three children seek the comfort of small-city or suburban Minnesota environment. Robert N. Crank, M.D.

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Arizona Based Physician Recruitment firm has opportunities coast to coast. "Professionals working with Professionals." Over 13 years experience. Call (602) 795-7474; or send CV to: Mitchell & Associates, Inc., 2761 N. Country Club Rd., Suite 202, Tucson, AZ 85716.

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FAMILY PRACTITIONER: BC/BE to join three board certified family physicians in a growing rural practice. Enjoy very competitive salary and benefits, excellent facilities and full privileges in adjacent city owned hospital. Contact Carl Melling, M.D., Melrose Clinic, P.A., 603 West Main Street, Melrose, MN 56352, (612) 256-4228 (office) or (612) 256-7227 (home).

FAMILY PRACTICE — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

BELTRAMI HEALTH CENTER seeks a full-time family practice physician. Opportunity to work in community health center with a team of professionals providing comprehensive health services, education and counseling. Clinic offers flexible hours, professional liability insurance, competitive salary and benefits. Direct inquiries to: Beltrami Health Center, 938 Lowry Avenue N.E., Mpls. 55418.

GENERAL PRACTITIONER and family would like to move back to Minnesota. Twenty-eight years of experience. Worked ten years in a general hospital, with four years approved general practice residency and seventeen and one-half years of private practice in Indiana. Perferably limited O.B. Have Indiana and Minnesota medical license. Write to: F. Arive, M.D., P.O. Box 36067, Oaklandon, IN 46256.

FAMILY PHYSICIAN OR General Internist needed for an established primary care clinic of four Family Physicians and a General Surgeon. Guaranteed first year salary with benefit program. Located in a small town on the beautiful north shore of Lake Superior (service area population of 12,000) only 22 miles from Duluth which provides excellent referral and continuing education resources. Call collect (218) 834-2171 or write Steve Bjorum, Executive Director, Community Health Center, Inc., 4th Street at 11th Avenue, Two Harbors, MN 55616.

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OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

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Minnesota - Scenic Northern Minnesota town of 20,000 with a referral area of 35,000 seeks pediatrician to join multispecialty clinic. Challenging consultative and primary care pediatrics. Good benefits, early partnership, nationally recognized schools. Adjacent to national parks, ski areas, and lakes. Back up by board certified pediatrician/neonatologist available. Send curriculum vitae to John Brust, Mesaba Clinic, 1814 14th Avenue East, Hibbing, Minnesota 55746 or call Colleen Dinter, M.D., 218-262-4420 or 218-262-3441.

Family Physician: Board certified, full-time position teaching residents and medical students at Hennepin County Medical Center (an equal opportunity employer. Applications from women and minorities are specifically invited.) Academic appointment - University of Minnesota Medical School. Inquiries to Stuart V. Thorson, M.D., Department of Family Practice, Hennepin County Medical Center, 701 Park Avenue South, Minneapolis, Minnesota 55415 (612) 347-3103. Applications will be accepted to September 30, 1985.

Full and Part-time physicians needed for a medical management firm, providing services to large companies on a nationwide basis. Responsibilities to include managing and directing R.N.s and other professionals for medically effective utilization review. Send resume or curriculum vitae to: Medical Director, Health Risk Management, Inc.; 8000 W. 78th St., Edina, MN 55435.

Family Practitioner needed to join large multispecialty group prepaid plan in the Minneapolis/St. Paul area. Very competitive compensation and benefits. Contact: MINNESOTA MEDICINE (761), 2221 University Avenue SE, Suite 400, Minneapolis, MN 5414.

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Internal Medicine: The Fergus Falls Medical Group, P.A., Department of Internal Medicine seeks a fifth BE/BC general internist with interest inallergy, rheumatology, oncology, or cardiology. Our Group is located 175 miles NW of the Twin Cities and is the largest incorporated city between St. Cloud and Fargo, North Dakota. Our patients enjoy a full range of primary and secondary care services. Current clinic specialties include; Internal Medicine, General Surgery, Orthopaedics, Otolaryngology, Oral Surgery, Pediatrics, Ob/GYN, and Family Practice. Other specialties in our community include: Radiology, Pathology, Anesthesiology, Ophthalmology, and Urology. We Offer a stimulating professional atmosphere, an excellent financial opportunity, and a good working relationship with our adjacent 100 acute bed hospital located in a thriving community offering a high quality of life. If interested, please write or call collect at: (218)739-2221, Ext. 203, David T. Bjork, M.D., 615 South Mill Street, Fergus Falls, Minnesota 56537.

Medical Doctor to have acute inpatient medicine and ambulatory care responsibilities. Prefer Board Eligible/Board Certified Internist with background in primary care internal medicine. Position offers: a competitive salary, a 40 hour week, malpractice coverage, 30 days paid vacation, and other excellent fringe benefits, in a JCAH accredited progressive medical center having a large patient population, adequate staffing, including Physician Assistants, and research opportunities. Financial assistance to defer cost of relocation. Equal opportunity Employer. Write or call Personnel Service, Veterans Administration Medical Center, St. Cloud, Minnesota 56301. (612) 252-1670.

Recruitment for Faculty Positions - Clinical faculty, rank negotiable, University of Minnesota School of Dentistry. Applications are invited for part-time consultative diagnostic and treatment planning services in specialty clinics. M.D. degree required. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Please send a brief resume and area(s) of clinical specialties (or request an application form). Bonita P. Bartholomew, University of Minnesota School of Dentistry, 15-174 Moos Tower, 515 Delaware St. SE., Minneapolis, Minnesota 55455.

Classified Advertisements

Orthopedic Surgeon - Columbia Park Medical Group, a growing practice of 50 physicians is seeking a full time (4 day work week with reasonable call shedule) Orthopedic Surgeon. Some subspecialty interest desirable, but not necessary. If interested, call Tom Behrend at 571-0457.

One or two family physicians needed immediately in rural Minnesota community on I-94 Competitive salary guarantee. Send resume to Minnesota Medicine, (754) 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414.

Family Practice - Northridge Family Medicine Clinic, P.A. is looking for a fourth BE/BC F.P. to practice in our new clinic facilities in Mankato. Contact Tony Giefer, M.D.; 1695 LorRay Drive, North Mankato, MN 56001 or call 507-345-5293.

General Internist - Marshfield Clinic, one of the nation's largest multispecialty private groups, is seeking several Board certified/Board eligible General Internal Medicine specialists to join its expanding 16 member section. Internal Medicine Residency Program, University affiliation, Research Foundation, and large regional referral base contributes to a very stimulating environment. Unique big city medicine opportunity in a family oriented rural setting. Please send curriculum vitae to: John P. Folz, Assistant Director, Marshfield Clinic; 1000 North Oak Avenue, Marshfield, WI 54449 or call collect at (715) 387-5181.

Internal Medicine - BC/BE Internist sought for four person Internal Medicine group based in the northwest Minneapolis suburbs of Crystal and Rogers. Close hospital association with North Memorial Medical Center. Please send C/V to: Bass Lake Physicians, P.A.; P.O. Box 29188; Minneapolis, Minnesota 55429.

Recruitment for Faculty Positions - Clinical faculty, rank negotiable, University of Minnesota School of Dentistry. Applications are invited for part-time consultative diagnostic and treatment planning services in specialty clinics. M.D. degree required. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Please send a brief resume and area(s) of clinical specialties (or request an application form). Bonita P. Bartholomew, University of Minnesota School of Dentistry, 15-174 Moos Tower, 515 Delaware St. SE., Minneapolis, Minnesota 55455.

Vacation Rentals - Snowmass, Colorado. House, 3 bedrooms, 3 baths, fully equipped, 5 min. from ski lifts. Rent direct from owner and save 35%. R.N. Barr, M.D.; 7301 Mission Road; Prairie Village, Kansas 66208, or call evenings 913-649-1277.

Family Practice Physician wanted for rapidly growing multispecialty clinic. Outstanding opportunity, good salary and excellent benefits. Clinics located in northern suburbs with easy access to both Minneapolis and St. Paul; three satellite clinics located within a 15-mile radius of main clinic. Please direct inquiries to: Samuel C. Shield, (C1555) Minnesota Medical Services Corporation; 2221 University Avenue S.E.; Minneapolis, Minnesota 55414.

Northern Minnesota Internist in solo practice looking for partner. Prospect should be board eligible. Community offers all specialties and appeal of sophisticated resort area atmosphere. Current physician wishes to remain confidential. Please direct inquiries to: Samuel C. Shield (C1557); Minnesota Medical Services Corporation; 2221 University Avenue, S.E.; Minneapolis, Minnesota 55414.

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Physicians: All specialties. BE/BC. Over 200 positions nationwide. Contact Earl Czech, North Central Staff Services, Inc., 4175 Lovell Road, Suite 108, Circle Pines, Minnesota 55014. Phone answered day and night. (612) 786-1929.

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Primary Care Physician - opportunity for internist or family practitioner in north suburban area. Contact: Dr. Duane Orn, Northport Medical Center; 5415 Brooklyn Boulevard, Brooklyn Center, Minnesota 55429. 612-533-8666.

Recruitment for Research Positions - Applications are invited for part-time Research Fellow (D.D.S. required) and/or Research Associate (Ph.D. required) positions at the University of Minnesota School of Dentistry. Applicants must have at least two years of research training. Positions will provide research expertise in planning and execution of research projects and instruction of students and technicians in research design and methodology. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Please send a brief resume and area(s) of research specialties (or request an application form). Bonita Bartholomew, University of Minnesota School of Dentistry, 15-174 Moos Tower, 515 Delaware St. SE., Minneapolis, Minnesota 55455.

Needed immediately, physicians for General Practice, Internal Medicine specialists and pediatrican for growing Southern Minnesota medical group. Three young physicians with good supporting staff in various specialties need full time specialists and family physicians to meet growing need. Large brand new clinic and attached hospital with expansion plans in progress. Salary or independent practice available with optional buy in, liberal fringe benefits, very flexible call schedule and wide practice freedom. Please call — Tom Koehnen M.D., at (507) 375-3391 or write St. James Area Family Clinic, 1205 6th Ave. South, St. James, MN 56081.

Psychiatrist - Immediate full-time and part-time positions with established multi-office MH and CD organization providing services to a large HMO population in the Twin Cities. Position involves direct clinical services, supervision, and consultation. Board certified or eligible. Attractive compensation and hours. Pleasant working conditions. Send resume to: Ms. M.L. Haider, Metropolitan Clinic of Counseling, Inc.; 1401 West 76th Street, Suite 400, Minneapolis, Minnesota 55423.

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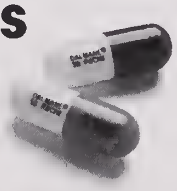

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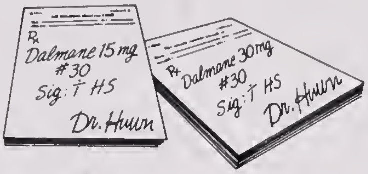

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Editor's Foreword

Sometimes a MINNESOTA MEDICINE issue develops a momentum all its own. The November 1983 issue "The Coming of Corporations" was such an issue. So is this one, which might be called "The Coming of Corporations to a University Medical Center."

I have never understood this momentum phenomenon. But I do know this. These issues happen because the time is right, because thinkers become concerned about something important to our society, because events demand they frame these concerns in print.

This issue contains an editorial, a letter, and several articles on the past, present and future of the University Hospitals and other Minnesota public teaching hospitals. The issue congealed because physicians collectively began to think through what current competitive frenzies portended for the academic and financial fortunes of important teaching institutions.

As we go to press, I am anxious to know how this issue will be received. I ask you to calm that anxiety (or to rile it up) by sending letters to the Editor, giving your views on this subject, telling me what you think of academic institutions openly competing, and informing me how you view the future.

Richard L. Reece, M.D.
Editor-in-Chief

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President's Letter

Public Enemy Number One

Peggy Craig

M. Elizabeth Craig, M.D.
President
Minnesota Medical Association

Throughout history populations have been panicked by plagues. We've read of the Black Plague that devastated Europe in 1300. Few of us remember the flu epidemic of 1918 that killed thousands and spread panic across the nation. For many of us the polio epidemics of 1946 and 1952 bring back vivid memories of high public anxiety and fear. Now we are plagued with another epidemic and public panic is high. This one is called *AIDS*.

In the last few days I have had three frightened mothers approach me . . . "My son needs a transfusion. Should I allow it? Is it safe?" "Can I safely teach a CPR class with mouth to mouth resuscitation?" "My neighbor is homosexual. Should I allow him in my house?" Others have questioned whether they would react as the Indiana and New York parents who are keeping their children from school in fear of an AIDS-infected classmate.

The reaction to the AIDS crisis is widespread; it is increasing; and it is persistent. There is so much about AIDS the public does not know. It is a new disease which suddenly dropped on the population. Even our medical sleuths know little about it. Ignorance is rampant, and ignorance breeds fear. Consequently fact and myth blend into hysterical reactions—is the disease spreading from homosexuals to straights? Can it be spread by casual and social contact with an AIDS victim? What is the danger to our children? Why don't we have a cure? What is the government doing about this? Are saliva and tears dangerous body fluids? Are carriers or those with ARC (AIDS Related Complex) dangerous to the public?

Our current plague differs from those of history in two very important ways. First, the public has come to expect a ready cure for all medical problems, and that is not happening. Obviously medical science is addressing the problem, and in time we will have a vaccine and a cure. But the public wants an answer now. And the panic increases.

Secondly, past epidemics have been simply medical and treated as such. This one is moral, social, psychological, and governmental in its concerns. Individual freedoms and civil rights of victims are being abused for what is considered the common good. Our whole social structure is being challenged.

There are reportedly at present 13,000 cases across the United States and over one million people carrying the virus without symptoms. AIDS is incurable and lethal. We are told the number of cases is doubling each year which means a catastrophic future unless the spread can be successfully stopped. Almost daily our papers carry an editorial or article with more speculation but very little fact.

The battle lines are drawn. Concern is expressed for the civil rights of the victims. An example is the recently enacted ordinance in Los Angeles which makes it illegal to discriminate against AIDS victims with regard to housing, jobs, and health care. This kind of legal decision raises concerns regarding the rights of the majority. Should we not control the victim of a disease that is contagious, but may not clinically manifest itself for many years? We have recognized AIDS for only four years. We do not totally understand the method of spread. Should we return to the control method of quarantine as we controlled the spread of infection 40 to 50 years ago? The public's tendency is to say "yes." The rights of the many outweigh the rights of the few.

What is the role of the physician? At the present our role has to be primarily educational. Medical researchers have identified the HTLV-III virus and know its action in the body. There is also a test for antibodies to the virus. Our patients must know that we are making progress, and they must know the facts we know. They must be reassured about the myths surrounding the disease, and they must be educated about appropriate lifestyles and protection against exposure.

The Minnesota Health Department has distributed recommendations for testing, examining, and counseling those patients with clinical AIDS or who are test positive. These guidelines have been developed by a task force of clinicians and personnel of the Acute Disease Epidemiology Section of the Minnesota Health Department. The committee continues to meet and distribute information as it becomes available. Only with education can our patients handle the decisions they must face.

The role of educator belongs to the physician. Political, legal, and governmental decisions must be guided by the medical community. The monies and research opportunities to find the answers we need must be provided.

To date the public information releases have necessarily been negative pronouncements such as "We have no evidence that casual contact is dangerous." Hopefully, soon the scientific data will be strong enough to make positive statements that can direct the public's actions.

Kipling wrote "If you can keep your head while all about you are losing theirs . . ." This is the physician's role. Only in this way can we guide our patients through this serious medical crises. Until such time as we have a vaccine and effective treatment for AIDS, we are obligated to guarantee that our patients are as knowledgeable as possible about preventing exposure to AIDS.

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Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: Myth-breaking, Image-making, and Corporate-Reshaping at the University of Minnesota Hospitals and Medical School

Thirteenth in a Series

"While promoting the development of new knowledge and taking pride in extending the limits of medical science, some of this country's academic health centers are encumbered by a university milieu that could best be described politely as conservative. The hierarchy and decision-making processes, which are quite appropriate for the academic divisions of a university, can severely compromise its clinical facility's need to move quickly and aggressively. Organizational fibrillation in any setting is simply incompatible with current marketplace conditions."

Paul Hofmann, Director, Emory University Hospitals,
"Leadership Challenges in the Academic Medical Center,"
THE INCORPORATION OF HEALTH AND CORPORATE LEADERSHIP,
The 1984 National Forum on Hospital and Health Affairs,
Duke University Medical Center, April 29-May 1, 1984

"On the basis of market share and payment source, teaching hospitals emerge as formidable competitors, not the terminally ill victims of the "medical industrial complex." The data reveal that from 1972 to 1981, teaching hospitals increased their overall share of surgical admissions from 22% to 28%, that the bulk of the market share increase came from procedures that are regarded as established and not through the introduction of new technology, and that for each procedure, teaching hospitals had the same distribution of public program patients, and the same distribution of medically indigent as did community hospitals."

David Marcus, Ph.D., "Competition and Teaching Hospitals,"
JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 254:408-409, 1985

MINNEAPOLIS—I shall describe the mood, cast of mind, and sense of direction among leaders at the University of Minnesota Medical School, University Hospitals, and affiliated teaching hospitals—Hennepin County Medical Center, St. Paul-Ramsey Medical Center, and Veterans Administration Medical Center. Because of limited space and time, I shall concentrate on the University.

Ties that Bind

Although the mutual missions of research and teaching and common problems bind the University to its affiliated hospitals, these hospitals are mostly autonomous, have their own competitive environments, and have their own individual strengths. For example, Hennepin County Medical Center runs a nationally recognized renal dialysis program; St. Paul-Ramsey Medical Center has outstanding burn and trauma units; and the Veterans Administration Medical Center conducts many geriatric programs as it girds for a tripling of the region's population elderly veterans by 1990.

Expenditures

To give you an idea of the comparative scope of operations of these hospitals and the University, here are their expenditures in 1983: Hennepin County Medical Center - $105 million; St. Paul-Ramsey Medical Center - $79 million; Veterans Administration Medical Center - $96 million; and the University of Minnesota Hospitals and Clinics - $150 million.

Two Events

Two events triggered this editorial: (1) an article in this issue detailing how Minnesota teaching hospitals are adjusting to competitive pressures* and (2) the following paragraph in the September 7, 1985 issue of the Minneapolis Star and Tribune:

> "The Minnesota Health Department licensed a new health maintenance organization Friday that health care expert Dr. Paul Ellwood said will force the state's 12 other HMOs to "begin competing on the basis of quality." . . . Ellwood, whose Minnesota-based think-tank InterStudy created the Nixon administration's "HMO strategy," said that the presence of University Hospitals and its highly skilled specialists as an optional referral center for the plan will make Primary Care Network an attractive alternative for people seeking prepaid health plans . . ." Until now the HMOs have competed on price and access—not on quality," Ellwood said."

Ellwood does not define what he means by "quality," but I suspect he is thinking of the University as having a halo of "quality" that will give it a competitive edge in a tough market. More on quality as a strategic marketing advantage later.

Seismic Shift

Anyway, after reading the teaching hospitals' article and after thinking about the University Hospitals and its staff's move to join forces with outstate physicians and an out-of-state consulting firm to form a "for-profit" HMO, I knew a seismic shift in intellectual and corporate climate was occurring in the University medical academic community.

Beyond these two happenings, I was also aware of an as-yet vague mood shift among private physicians to "save" the University from predatory competitors.* Practicing Minnesota physicians, most of whom received their postgraduate educations at Minnesota public teaching hospitals, and their medical education at the University of Minnesota value University Hospitals and its staff as core teaching resources but remain restive about them as competitors.

In the Front Rank

There is no doubt in physicians' minds that the University of Minnesota Medical Center stands in the front ranks of America's 127 academic health centers. Indeed, by almost any criteria you can name—papers produced, NIH grants attracted, or test scores of its graduates—the University of Minnesota Medical Center ranks in the top 20 of American Medical Schools. In the latest independent survey, the University was rated as the 16th best United States medical school.

At any rate, because of these various events, the time struck me as opportune to breach the town-gown barrier to see how the University was reacting to the stress of the corporate transformation of medicine in Minnesota.

---

*see Mulhausen et al. article, page 743.

*see Frank Johnson Letter, page 751.

Preparation

In preparing for this editorial, over the last two weeks I have held conversations with these individuals: Dr. James Moller, Professor of Pediatrics and Chief of Staff at the University of Minnesota Hospitals; Dr. Roby Thompson, Professor of Orthopedic Surgery, Head of Orthopedic Surgery, and Chairman of University of Minnesota Clinical Associates; Dr. William Krivit, Professor of Pediatrics, Head of Pediatrics, and Secretary of the University of Minnesota Clinical Associates; Dr. Neal Vanselow, Vice-President, Health Sciences, University of Minnesota; Dr. John Najarian, Professor of Surgery, and Chairman, Department of Surgery; Dr. John Verby, Professor of Family Practice and Community Health, and Director of Rural Physician Associate Program; Dr. David Brown, Professor of Pediatrics and Laboratory Medicine, and Dean of the Medical School; and Dr. John LaBree, Professor of Medicine and Assistant Vice-President, Health Sciences.

C. Edward Schwartz, Assistant Vice-President, Health Sciences, and General Director of the University of Minnesota Hospitals; Geoffrey Kaufmann, Senior Assistant Vice-President, and Director of Planning and Marketing, University of Minnesota Hospitals, David Coombes, President of University of Minnesota Clinical Associates; Dr. John Clarke, President of Primary Care Network; and C. Edwin Whitehead, President of Whitehead Associates.

Dr. Robert Mulhausen, Professor of Medicine, and Head, Department of Medicine, St. Paul-Ramsey Medical Center; Dr. John Scanlon, Executive Vice-President, Ramsey Clinic; and Dr. Kenneth Quickel, President, and Chief Executive Officer, Ramsey Clinic; Dr. Alvin Schultz, Professor of Medicine, Chief of Medicine, Hennepin County Medical Center, and Chairman of the Board, Hennepin Faculty Associates; Dr. Morris Davidman, Associate Professor of Medicine, Chief of Nephrology, and Chairman, Educational Policy Committee, University of Minnesota; and Dr. Robert A. Petzel, Associate Professor of Medicine, and Chief of Staff, Veterans Administration Medical Center.

Because of personal or family illness, I was unable to interview Dr. Edward Ciriacy, Professor and Head of Family Practice at the University of Minnesota, and Dr. Fred Shapiro, Professor of Medicine and President of Hennepin Faculty Associates. I would like to thank Mark Koenig, Assistant Director of Facilities, University Hospitals, for touring me through the new University of Minnesota Hospital.

General Questions

In my conversations, we covered these general questions: How are teaching hospitals faring in the current competitive environment? How is competition impacting on teaching and education roles? What steps are being taken to meet new competition? Are teaching hospitals doomed to fail when they strive to compete in the marketplace? Can their faculties teach, do research, care for those with inadequate insurance, and compete on price? Will these hospitals become obsolete? Or will they become formidable competitors?

A Sleeping Giant

I conclude teaching hospitals have the potential of becoming formidable competitors. The University of Minnesota Hospital, in my opinion, looms as a sleeping giant arousing itself.

Why? For three simple reasons: (1) its recognition factor among the general public; (2) the high proportion of its graduates among practicing Minnesota physicians; and (3) its concentration of specialists in one setting. The University and its faculty are marketable simply *because* they represent the University. With its 350 members, the University clinical faculty has the potential of becoming the largest multispecialty clinic in the Twin Cities.

Town-Gown Feelings

Before I bite into this editorial's meat, let me state I have been on the "town" side of the town-gown syndrome for 20 years. I am sensitive to the attitudes of many community physicians towards University Hospitals and its Medical Center, viz., that its environment has nutured an insular, arrogant, and complacent view of the outside world and that is has been, *on the whole*, poorly organized to deliver a systematic, organized, and purposeful level of services to either patients or referring physicians. Centers of excellence exist, but as an entity, the institution lacks consistency.

Notable and Quotable

As one physician quipped: "Their altitude has effected their attitude." Or, as another critic observed: "The University Medical Center is a series of independent fiefdoms connected only by a common heating system." The most common phrase I hear among critics of the University is that it simply does not "relate" to the outside. But "relate" it must, for the "outside" will supply patients, resources, and community support to make the University competitive in money, in education, and in research.

Corporate Rumblings

As I shall indicate, corporate rumblings at the University—assemblage of a new management team, new awareness of the importance of the external world, and internal efforts to unify various clinical departments—may make such critical comments relics of the past. There are also signs the University's faculty members may be taking more active roles in political, clinical, and leadership spheres outside the walls of the University. Almost one-half (48%) of the faculty now belong to the Minnesota Medical Association. This is higher than the past, but it does not approach the 89% of practicing Minnesota physicians who belong to the State Association.

Role of the Marketplace Events

Events in the marketplace—capture by HMOs of much of the Twin Cities' patient base and Twin Cities' HMO moves to expand to outstate Minnesota—are galvanizing the University to reconsider its relationships with organized medicine, whose members are now competitors as well as sources of referral. The old stereotypes of community physicians, held by some academic physicians, that they practice a slightly inferior brand of medicine, make too much money, join medical societies for self-serving purposes, and protect their economic and professional bottomlines are breaking down. The University has recognized it will need the cooperation of community physicians to survive and thrive. The University has trained and spun-off its own competitors. Community hospitals, staffed by University-trained specialists, have risen to compete with the University on the basis of quality, knowledge, and specialty expertise, even in high technology fields. The Univeristy realizes it must establish new relationships with its outside peers.

This Editorial

In this editorial, I shall concentrate on developments at the University of Minnesota Hospitals and Medical School Faculty. Hennepin Faculty Associates and Ramsey Clinic—the two public hospital practice plans—have already taken organizational steps to compete more effectively in their respective markets. Both are doing well in their respective niches. Meanwhile the Veterans Administration Medical Center is preparing for its deluge of aged World War II and Korean War veterans by launching innovative programs in geriatrics and by developing its own DRG system. Although the Twin Cities teaching hospitals compete in certain limited fields, they are bound together as the Minnesota Association of Public Teaching Hospitals, or MAPTH.

What is Happening

I am going to tell what is happening at the University of Minnesota Hospitals and the University of Minnesota Clinical Associates as these two entities struggle to adapt to the competitive health care marketplace. This struggle entails breaking of certain myths about the University, reshaping of long-held attitudes by the Medical School Faculty, creating of a new image of the Hospitals and Medical Center, and reshaping of the current organizations into corporate entities that can serve as vehicles to go to market in an increasingly competitive environment.

Opening of New Hospital

In March 1986, the University will open its new $125 million, 432-bed facility. The question that kept arising during my interviews was this: Can the University reshape its attitudes, mold a new image, forge new relationships with the outside world, and reorganize its structure in time to attract enough patients to service the debt of its spanking new hospital and bring in enough capital to compete? To turn around a large hospital in today's competitive world requires at least two to four years. Given the complexity of a large academic health center and the speed of change in the health care marketplace, does the University have time to adjust?

Positioning to Compete

Only time will tell. But one thing is sure. The University and the academic health center are positioning themselves to compete. They are taking steps and making moves designed to compete: (1) the Chiefs of the 18 clinical departments at the University have formed UMCA (University of Minnesota Clinical Associates) and named its President, David Coombes. UMCA will try to unify the Clinical Chiefs, establish common billing practices, negotiate contracts with HMOs, initiate joint ventures with physicians and hospitals inside and outside the walls of the University, and, of course, market the clinical and technical skills of the University faculty members; (2) University Hospitals and UMCA have joined with Whitehead Associates, of Greenwich, Connecticut, to strengthen Primary Care Network, a for-profit HMO designed to link the expertise of University physicians with referring physicians, most of whom are located in outstate Minnesota; and (3) University Hospitals and UMCA are working together on marketing and corporate strategies designed to improve the image of the academic health center, to elevate its level of clinical services, to improve its relationships with referring physicians, to speed up referral letters, and to target its marketing towards patients in the Twin Cities and towards referring physicians outside the Twin Cities.

"Myths"

One of the subjects that kept surfacing as I spoke with University people were the "myths" connected with the University Hospitals and the Medical School Faculty. These "myths" might better be described as misconceptions or misperceptions on the part of the public and practicing physicians. Some of these became apparent during focus group discussions the University sponsored among Twin Cities' citizens.

- The first myth the University wishes to counter is the impression all patients need a referring physician to be admitted to the University's Hospitals. This is not true. As a public institution, University officials say their doors are open to any Minnesota citizen for any medical condition. (You may have noted that the University Hospitals' television advertising stresses it can handle the simplest of problems, e.g., a sprained ankle. The University's overall strategy, as I understand it, will be two pronged: (1) to market directly through the media to Twin Cities' citizens for primary care problems; (2) to market by networking, educational programs, HMO affiliations and other means to referring outstate physicians.)

- The second myth is that University Hospitals is a high-powered, high technology medical center that treats only rare or terminal diseases. (To train its students and residents adequately and to maintain its financial stability, the University faculty and University Hospitals' officials know they must attract a comprehensive mix of patients. This is why the University seeks to break the myth that it is primarily a tertiary referral center.)

- The third myth that persists, I was told, is that the University Hospital is exorbitantly expensive compared to community hospitals. (According to the Council of Community Hospitals' report on September 12, 1985, the University is higher in its charge for 2/3rds of the 25 most frequent diagnoses, but it is less than five percent above the average for 1/3rd, lower for 1/3rd of those diagnoses. Overall, University charges are just 12 percent higher than the average Twin Cities' community hospital.)

- The fourth myth that distresses the University is the rumor that its number of patient days are dropping precipitously compared to other hospitals. They point out, and I agree, that the entire hospital system—public and private—is shrinking. (In any event, here to give you an idea of the relative shrinkage for various hospitals are figures for 1984 compared to 1983.)

	Patient Days		
University of Minnesota	*1983*	*1984*	*% Dropped*
Medicare	53,874	44,504	17.9
Non-Medicare	143,835	130,470	9.3
Total	197,709	174,974	11.5
Community Hospitals			
Medicare	800,537	612,928	23.4
Non-Medicare	1,480,663	1,375,031	7.1
Total	2,281,200	1,987,959	12.9

You cannot judge a hospital's relative strength on the basis of these figures. Besides, some hospitals are emphasizing their more profitable "products," while de-emphasizing less-profitable areas that may generate more patient days. In the new environment, patient admissions and patient day figures may become increasingly irrelevant to the true financial performance of the hospital.

- The fifth myth the University Hospitals wants to address is that it receives most of its support from public funds. I was told on at least three occasions that the State of Minnesota supplies only six percent of the funds needed to run the University's Hospitals. I was also informed that among state-run medical schools, the University ranks about in the middle in terms of financial support per medical student. (The perception that the state supports the Medical School lavishly may spring from its very size. Among America's 127 medical schools, the University ranks third in total enrollment. Yet, because of relatively modest support per student from the State of Minnesota, the University has one of the highest tuitions for state residents and nonresidents among public medical schools.)

Tuitions for Residents and Nonresidents Among Ten United States Medical Schools with Largest Enrollments

Schools	*Tuition* *Resident*	*Nonresident*	*Total Enrollment*
1. U. of Illinois	$ 5,032	$15,096	1,317
2. U. of Indiana	3,800	8,000	1,168
3. U. of Minnesota	7,700	15,000	1,068
4. Ohio State U.	5,548	11,580	941
5. U. of Michigan	3,230	6,165	912
6. Jefferson	14,100	14,100	890
7. SUNY, Downstate	Not available		853
8. Georgetown	Not available		820
9. Texas, Houston	2,400	4,800	810
10. Texas, Southwestern	Not available		808

SOURCE: In September 27 JAMA.

- The sixth myth that the University wants to dispel is that it does not regard physicians as an important and valued constituency. (If you have read the article "Filling University Hospitals in the Year 2000" in the March-April 1985 issue of MINNESOTA, published by the University of Minnesota Alumni Association, you will find just how important corporate and marketing leaders at University Hospitals consider the physician, particularly the non-metropolitan physician.[1] In the article an administrator mentions patient referrals from outstate Minnesota as "historically our bread and butter.")

- The seventh myth the University wants to address is the belief that it does not wish to deal with HMOs (The University is well aware that is has been largely isolated from the Twin Cities' HMO market. The "disruption" of referrals from PHP in the last ten years has particularly galled the University. University Hospitals have dealt with Group Health, and to a lesser extent with HMO-Minnesota and SHARE, but HMO patients make up only a fraction of admissions. Nonetheless, I gathered the impression from several sources that the September announcement of the forming of Primary Care Network constituted a breakthrough in negotiating with other HMOs. I was informed several of these negotiations are already underway.)

- The eighth and last myth is related to the perception that the debt service on each bed in the new hospital will be so high it will render University Hospitals unable to compete. (Because of refinancing the debt and other considerations, the University Hospitals will only have to increase its rates one to two percent to service its debt.)

Corporate Reshaping

As I talked to leaders at the University academic health center and at the teaching hospitals, I realized health care market forces have begun to radically transform academic health centers and teaching hospitals. These forces have been late in coming to academic health centers because these centers are coming off 25 years of unparalleled expansion. The American public has shown such open-ended generosity towards expanding the medical-academic complex that academic leaders became complacent and thought of themselves and their institutions as immune to market forces—a cocoon for the lofty missions of teaching, research, and technology development.

If you doubt the magnitude of this academic expansion, I invite you to consider this table, which appeared in the September 27 issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

	1958-1959	*1983-1984*
Number of schools	85	127
Number of students		
medical students	29,614	67,443
graduate students in basic sciences	4,122	14,454
post-doctoral students	168	3,750
residents	15,514	52,092
Number of full-time faculty	10,360	59,092
Total expenditures	$319 million	$8.754 billion
general operations	$175 million	$5.517 billion
sponsored/restricted	$144 million	$3.238 billion
research	$144 million	$1,119 billion
federal	$74 million	$1,296 billion
teaching and training	$25 million	$508 million
federal	$21 million	$187 million
health and community services	$5 million	$938 million

SOURCE: Jolly, H. Paul et al.: U.S. Medical School Finances, JOURNAL OF AMERICAN MEDICAL ASSOCIATION, 254:1573-1581, 1985.

Perverse Academic Incentives

I believe this federal largess has fostered a set of perverse incentives that make competing difficult. The incentives have been to turn out specialists rather than generalists; to train doctors to function in hospitals rather than in outpatient settings; to reward those who do research rather than those who apply that research; to encourage participation in national rather than regional or local forums; to value those who write papers more than those who are skilled clinicians; to promote those who solve problems within the internal bureaucracy rather than those who seek outside opportunities; and to rely for management decisions on those who have mastered the body of medical knowledge rather than who are versed in the managerial disciplines.

The Mind-Set

Here Eli Ginsberg describes the mind-set that has evolved in Academic Health Centers (AHCs) as a consequence of affluence:

"A number of major transformations accompanied the cascade of funds into the leading AHCs. The AHC was almost totally removed from university control once it became a contributor to rather than a beneficiary of central budgeting. The system of external financing for research reduced the authority of the dean to a point where he was beholden to his principal investigators rather than they to him. The heads of the major departments of the medical school, who in most instances were also the directors of the corresponding services in the principal teaching affiliate, became all-powerful barons by virtue of their control over research funding, residency slots, fellowships, training funds, and hospital beds. Each had his own kingdom. Prestige and future careers were determined by the esteem of colleagues in the U.S. and abroad. In addition, the NIH's reliance on peer review for grant determination transformed the principal investigator from a professor with collegial values, and institutional allegiance into an academic entrepreneur in a position to bargain with different schools and often the grant went to the highest bidder."[2]

Ginsberg goes on to say that he believes that Academic Health Centers will really be put to the test from 1985 to 1995 and that they "are much more vulnerable than assumed." Then he notes, and I think these comments describe some of the turmoil going on at the University Hospitals and its attending staff:

"Different AHCs, depending on their circumstance and profit margins, have begun to reposition themselves. Some universities are reoganizing their principal teaching hospital as a separate corporation so that they will be buffered from the uncertainties of the hospital environment. Some teaching hospitals are working out new arrangements with their attending staff. Still others are entering into alliances with potential competitors or developing relationships with HMOs and PPOs which will provide a more certain stream of patients, many of whom will require tertiary care."[2]

Ginsberg's language captures what is going on at the University Hospitals and what is occurring within its attending staff. Both the hospital and the staff are "repositioning" themselves to assure a "more certain stream of patients." The Academic Health Center is going through a period of corporate restructuring as it tries to adjust to the present and prepare for the future.

Flurry of Activities

This restructuring has generated a flurry of activities—market research among potential consumers (the public, physicians, insurance companies, HMOs, and corporations), the formation of a strategic planning committee that meets regularly, weekend retreats of the medical staff to search for common ground, the bringing in of seasoned business executives to help with marketing, raising capital, and putting a management team together; the gathering together of 18 clinical department heads to form UMCA (University of Minnesota Clinical Associates), a separate corporation; and, significantly, the investment and financial commitment to an HMO, run by a for-profit management company with a $2.5 million reserve and operating fund, that allies 450 family physicians and internists, 500 private practice specialists, 350 faculty members, and the University Hospitals.

Keeping in Touch

One important aspect of all this activity is that the University Hospitals and its staff are finally beginning to wander around in the outside world to get close to their potential customers. Dr. John LaBree, for example, has formed an Outstate Physicians Advisory Council, composed of doctors from 25 communities. This council keeps the University in touch with its referral base and provides the opportunity to exchange knowledge, mostly in the form of visits by University personnel to those sites. In addition, the University is setting up a series of computer terminals, 14 at present, in those communities where medical students serve in the University's Rural Physician Associate Program. The University has found that those communities served by RPAP have a referral ratio of 4:1 to the University Hospitals compared to those communities where no Rural Physician Associate has ever served. At those computer terminals, students will be able to track data and progress reports on patients hospitalized at the University, and they will also be able to use the terminals to interact with computer teaching and information programs.

Medicine versus Business

As highminded and as progressive as these activities may seem, there remains an unanswerable question: Can University and Academic Health Center leaders reshape their philosophical beliefs enough to be effective competitors in a tough marketplace?

When I say "philosophical beliefs" I refer mostly to pervasive sense of wariness, uneasiness, and mistrust among academicians towards business. Many of the academic community, it is safe to say, simply do not trust corporations to allocate funds to the poor, the underinsured, the old, or to research and teaching. You see this mistrust most clearly expressed in the pages of the NEW ENGLAND JOURNAL OF MEDICINE, under such titles as "Megacorporate Health Care," "On Business and Medicine," "Choosing the Arbiter: The Market or the Government," "Bottom-line Health Care?," "What About the Patient?" "The Monetarization of Health Care," "Medicine versus Economics," and, of course, Arnold Relman's seed article. "The New Industrial Complex."

Relman challenged the morality of medicine having anything to do with business and of doctors having any financial connection with profit-making health care enterprises.

The academic community, to use a Reagan Administration phrase, does not feel it is competing on "a level playing field." Medical school faculty members question how much support they can give to each leg of the metaphoric three-legged stool—education, research, and patient care—that describes their missions. They ask: How much energy and resources and time can the University pour into clinical services to make them competitive without stinting on research and education?

Rashi Fein, an economist at Harvard Medical School, describes the academic dilemma this way:

> "The marketplace is an arena in which some win and others lose. The rules of the game are such our teaching institutions and those that they serve will be the losers. There is simply no way that institutions with a commitment to teaching, research, and care for those (or at least some of those) who have inadequate or no health insurance can compete on price . . . The market is governed by an invisible hand. There is no mailing address, no telephone number, no group of decision makers to whom one can turn."[4]

Questions of Education

During my conversations, provocative and profound questions kept cropping up about educating medical students and residents. How do you prepare students to work in an HMO? Do you change the curriculum to accommodate matters of money, management, cost containment, efficiency, and quality? Do you have those in training spend time offsite in HMO or multispecialty clinic settings? If national firms take over 50 percent of the medical care by the 1990s, as Ellwood predicts, will this takeover fatally weaken the grip of specialty boards over postgraduate training? "Should we," one person asked, "just turn freshly minted MDs over to the HMOs for training?" How do you compete efficiently when you're training students and residents? Their very presence slows diagnostic workups and lengthens hospital stays. How can you train someone in the art of history taking and physical diagnosis when the patient is admitted at 10 a.m., operated at 11 a.m. and discharged at noon? How can you run a thoughtful, reflective, and thorough teaching program under these circumstances?

In short, how do you turn your educational program inside out—i.e. from inside the hospital to outside in ambulatory care settings—and upside down—i.e. from academic hierarchy to a corporate bureaucracy—at the same time?

I certainly do not know, but medical students are concerned about their future economic and practice environment. Last year, six months into their education, freshmen students at the University sponsored a seminar: "The Marriage of Management and Medicine: For Better or Worse?" That student leaders would initiate and organize such a gathering shocked the old guard among the faculty, but the students' action was a signal of their concern and a sign of the times. Furthermore, students are becoming increasingly active and vocal in the activities of organized medicine.

Thoughts on Quality

In a competitive, price-conscious market, the plaintive cry you hear most often among physicians, particularly academic physicians, is "When are we going to talk about quality?" Let's talk about it now.

"Quality" in health care lies in the mind and experience of the beholder. To the independent fee-for-service physician it is often a nostalgic dream that we should be allowed to practice the way we used to—autonomously, with unlimited access to the "best consultants." The public often feels the same, which is why PHP's "freedom of choice for the individual" campaign has produced the strongest and fastest growth among Twin Cities HMOs. To the HMO or multispecialty clinic physician or member, quality means a setting where standards and controls are imposed to achieve consistent and comprehensive levels of service. To an entrepreneur executive such as David Jones, chief executive officer of Humana, quality is sensitivity to "consumers"—anticipating their needs, responding to their feedback, listening to them, and providing them with instant access and reasonable affordability. To a scientifically trained "structuralist" like Walter McClure, quality is applying objective measures—such as statistical analysis of claims or medical records or the Brewster-Jacobs computer system, which assesses patient's clinical state at admission (severity) and at 10 days (outcome). McClure says you should judge doctors' performances by their statistical "batting averages" in treating patients and achieving desirable outcomes.

To the academic health care specialist "quality" care may exist by the simple virtue that care is being rendered in a university setting. After all, do not university faculties attract "the best and the brightest?" Do they not offer the latest in research? Do they not provide the latest in treatment, and are they not on the leading edge of technology? In many instances, particularly in high technology fields, the answer to these questions is "yes."

But the bulk of University Hospitals' revenues do not come from high technology procedures nor from treating rare diseases; most money still must come from mundane operations and common illnesses. For certain fields—transplants and treatment of childhood leukemias—the University will remain the epitome of "quality," but other hospitals feel they can offer the same or superior quality for procedures done more often or diseases seen more often in their own institution than the University. So the question for the present is: Can the University translate its quality into a marketing asset that will attract the right mix of patients? For the future, the question may be: Can the University document that if has a superior outcome for a given category of disease?

Summing Up

The University of Minnesota Hospitals and academic faculty stand in the first rank among American academic health centers. Yet each is threatened and vulnerable to current and future competitive economic forces. Each is in the process of restructuring itself internally to cope with the external environment. In this collaborative effort, the academic health center has: (1) formed a practice association for the faculty and named an outside business executive as president; (2) joined with an out-of-state consulting firm to buy an interest in a for-profit, largely rural HMO; and (3) began to build a management team to engage in strategic planning, to build a marketing strategy to handle client relationships, and to enhance the level and consistency of its clinical delivery systems.

Whether these efforts will succeed remains unknown. One of the imponderables is whether sufficient numbers of management and faculty will be able to modify traditional attitudes in enough time to cope with the new economic realities. It is my own view that the University of Minnesota academic health center is awakening from a deep slumber and has the intellectual, management, and economic resources to become a formidable competitor in two to five years.

Richard L Reece MD

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Minnesota's Public Teaching Hospitals

Adapting to Change

ROBERT O. MULHAUSEN, M.D.*; JOHNELLE K. FOLEY†; JAMES H. MOLLER, M.D.#; ROBERT A. PETZEL, M.D.**; and ALVIN L. SCHULTZ, M.D.***

This article describes the Twin Cities' competitive health care delivery environment and its impact on the community's four major teaching hospitals. Activities undertaken by these hospitals in response to competition in their market are outlined. Questions are raised regarding the appropriateness of these institutions in an era of projected physician surpluses and justifications are presented to support their preservation. The teaching hospitals' special missions in education, service, and research are described as are other less known activities which they provide. The cost implications of these societal contributions are considered with special attention being given to the future of graduate medical education. A list of GME funding options under consideration is provided.

The article concludes that quality in health care delivery will be an important issue for the future. Teaching hospitals will ensure the ongoing tradition of quality by continuing to serve vital public roles—as regional resources, as developers and evaluators of new technology, and as researchers into clinical efficiencies and improvements in patient care. If society is to continue to benefit from the special contributions of teaching hospitals, it must recognize and support these institutions and their missions. The Minnesota teaching hospitals plan to aid this process by documenting and justifying their costs to ensure that requests for support are reasonable. Collectively and individually, they plan to realign their services in response to marketplace needs and they plan to work together to increase the community's awareness and understanding of the issues impacting teaching hospitals. With an informed and supportive public, Minnesota's teaching hospitals can thrive and serve as a national prototype.

All hospitals are feeling the effects of the drastic changes in the medical economy. Increasing costs, intensified competition, dwindling governmental support, and an apparent oversupply of physicians each have had profound effects on the medical scene. These trends have influenced the entire health care industry but particularly they have affected public teaching hospitals.

Minnesota leads the nation in changes in its health care delivery system. With a current HMO enrollment of 36% (including 18% of the eligible Medicare beneficiaries) in the seven-county metropolitan area, those hospitals and physicians not integrally linked into prepaid systems have been affected as Richard Reece[1] stated, ". . . as though nearly three-quarters of a million people have left town." His analyses of the corporate transformation of medicine in Minnesota presents a detailed view of the situation facing local hospitals and physicians.[2] Vanselow[3] discussed the disadvantages teaching hospitals face as they try to compete and educate in this environment.

In this paper we will discuss the effect of these changes upon Minnesota's four public teaching hospitals, both individually and as a group. Four questions are pertinent to the current and future effect of the health care environment on the public teaching hospitals in Minnesota:

1. How are these hospitals reacting to these profound changes?
2. Will these changes adversely impact the public teaching hospitals and jeopardize the continuation of the important missions they fulfill?
3. Is the future status of these hospitals dependent solely on internal adjustments to operations or should it be of broader interest to the medical community and to the public at large?
4. What forces might be mobilized to effect changes in the public teaching hospitals which are consistent with current trends?

How are the Public Teaching Hospitals Reacting?

Minnesota's four public teaching hospitals—Hennepin County Medical Center (HCMC), St. Paul-Ramsey Medical Center (SPRMC), the University of Minnesota Hospitals & Clinics (UMHC), and the Veterans Administration Medical Center (VAMC)—account for a sizable portion of hospitals' admissions and the inpatient census in the

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*St. Paul-Ramsey Medical Center.
†Minnesota Association of Public Teaching Hospitals.
#University of Minnesota Hospitals & Clinics.
**Veterans Administration Medical Center.
***Hennepin County Medical Center.
From the Medical School and School of Public Health of the University of Minnesota and the Minnesota Association of Public Teaching Hospitals.

region, as Table 1 illustrates.

Over one-fourth of the inpatient hospital days in Twin Cities hospitals and nearly one-tenth of the days in all Minnesota hospitals occurred in these four hospitals during 1983. Measures of inpatient and outpatient activity are shown in Table 2.

These statistics indicate the scope of patient care provided by these institutions but they do not illustrate the breadth of their medical programs and services or their teaching and research efforts. In these four hospitals, approximately 1,100 medical residents and fellows participate yearly in accredited training programs in 30 medical specialties and subspecialties. In addition, another 3,300 persons each year are instructed in 35 other programs for various health care professions ranging from nursing to hospital administration.

Summary statistics do not reflect the effort and costs of the basic and clinical research performed by personnel at these institutions. Forty-seven million dollars were expended on research in 1984. Well over 1,000 research papers were written in 1984 covering a wide variety of clinical and basic science topics.

These four hospitals are also major employers in this community, with approximately 10,000 full-time equivalent employees. Further, a substantial proportion of physicians and other health care professionals currently practicing in Minnesota received either a portion or all of their training at one or more of these hospitals.

The public teaching hospitals of Minnesota are large institutions which have a major effect on patient care delivery in the state. But these hospitals are challenged; economic changes have increased expenses, decreased revenues, and eroded patient bases. Like other hospitals, length of stay has decreased, more procedures are performed on an outpatient basis, and Medicare and Medicaid reimbursements continue to lag further behind billed charges. But *unlike* other hospitals, their proportion of uncompensated care has increased noticeably; their traditional funding sources for their special missions have declined; and their apparent higher costs have jeopardized census levels because competitive medical plans have directed patients to lower-cost community hospitals.

Faced with these special challenges, the four public teaching hospitals are devoting considerable time and effort on joint solutions through their association, the Minnesota Association of Public Teaching Hospitals (MAPTH). In 1975, the four

TABLE 1

Statistical Comparison between MAPTH Hospitals, Minnesota Hospitals and Twin City Hospitals, 1983[4]

	All Minnesota Hospitals	All Twin City Metro* Hospitals	MAPTH Hospitals	MAPTH Hospitals as a Percent of all Twin City Hospitals	MAPTH Hospitals as a Percent of all Minnesota Hospitals
Inpatient Days	6,787,090	2,274,068	635,346	27.9	9.4
Beds in Service	25,190	8,484	2,319	27.3	9.2
Admissions	943,564	299,263	71,365	23.8	7.6

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*All hospitals in the 7-county area except Anoka State Hospital and the Shriners Hospital in St. Paul.

Source: Minnesota Hospital Association (December, 1983).

TABLE 2

Selected 1983 Statistics for Minnesota Public Teaching Hospitals[4]

	HCMC	SPRMC	UMHC	VAMC	TOTAL
1983 Expenditures	$105,048,511	79,215,441	150,249,236	96,253,950	430,767,138
Beds in Service	428	418	735	738	2,319
Patient Days	115,530	109,003	198,965	211,848	635,346
Average Census	316.5	298.6	545.5	580	1,740.6
ER Visits	58,305	62,255	15,992	– – –	136,552
Clinic Visits	169,984	192,655	194,068	237,290	793,997

public teaching hospitals began meeting informally to share information and discuss issues of mutual concern. This interaction proved so beneficial that in 1980, the group incorporated as MAPTH, a non-profit corporation, and in 1981, hired full-time staff and established a separate office. Joint activities and consolidated programs have been developed to avoid duplication and enhance efficiencies in health care services, education, and research.

MAPTH's mission is:

> ". . . to support the cooperative effort of its member institutions as they work together toward developing a cost effective health care delivery system which maintains quality health services for patients served within an educational framework for health care professionals and an environment which stimulates research and development."

Currently, MAPTH is involved in several issues. Two of these, medical education cost determination and financing alternatives, will be discussed in this paper. Individually, the hospitals and their associated faculty groups are restructuring to gain flexibility to negotiate competitively and to provide incentives for cost-effective care without losing their special education and research-oriented environments.

- At the University of Minnesota Hospitals & Clinics, faculty physicians are forming a new corporate structure to allow them to collectively negotiate contracts.
- St. Paul-Ramsey Medical Center made substantial staff cuts in early 1984 and has implemented numerous internal procedural and administrative changes designed to increase efficiency. Education programs in cost effective care are now commonplace; all orders for diagnostic tests are now specifically reviewed in terms of their cost-effectiveness.
- At Hennepin County Medical Center, in order to establish greater accountability among its faculty and to hold on to its traditional patient population as well as compete for patients in the future, the faculty of HCMC established an academic faculty practice plan in 1984.
- The Veterans Administration Medical Center is adopting a new system of accountability using DRGs to allocate and monitor resource utilizations.

Despite this collective and individual activity, physicians and others still may question whether or not the large teaching hospital is an appropriately obsolete institution—whether they are, as Paul Ellwood has suggested, the "big cars" of the health care industry.

We are Overdoctored—Why Bother to Preserve Teaching Hospitals?

A cursory evaluation of this question could well lead to a conclusion that large teaching hospitals are an idea whose time is past. The very name "teaching hospital" sounds suspect in an era when a physician surplus is considered to be present. A steady stream of new physicians is unwelcome news in a state where four of five doctors already believe there are too many physicians, where physician income is declining, and where the fee-for-service system is in peril.[1]

Once again, Minnesota may be leading, but the rest of the nation is catching up quickly. In a national study, the proportion of physicians replying stated that "there are too many physicians in their community" increased from 33% in 1981 to 45% in 1983.[5]

But we must look beyond the thought of a doctor surplus and consider long term physician manpower needs and training. The nation met the challenge of a physician shortage in the 1960s through increased enrollment, expanded residency programs, establishment of new medical schools, and substantial governmental subsidies. These steps may have been an over-reaction to the situation, although estimates of oversupply vary greatly. Meanwhile, health care delivery continues to change drastically. The changes include:

Provider Arrangements

Currently, medical services are available through a variety of new arrangements—prepaid programs, HMOs, for-profit providers, multi-clinic groups, multi-health care corporations.

Technology

Advanced, expensive technology dominates a large segment of health care delivery.

Physician Attitudes

Young physicians' expectations for their careers, personal time, and professional incomes have altered.

Patient Attitudes

"Consumers" (erstwhile patients) demand more information, and no longer regard long waits nor rushed physician visits as reasonable.

Population Trends

Age shifts have *increased* the number of elderly who need more and more complex care, and *decreased* the potential pool of medical school applicants.

For each of these reasons, and because medical education is the future of health care, a projection of physician supply over the next three *decades* would seem more advisable than a three-*year* view. So while it may be wise to make adjustments to the current medical education system, it would not make sense to reverse progress. There will be a continuing demand to train health professionals. Teaching hospitals will need to educate professionals who will provide medical services in new and different ways to new and different patient populations.

Everybody has Problems; Why should Teaching Hospitals get Special Help?

MAPTH hospitals, like their community counterparts, are not alone in their concerns about their futures . . . but they are particularly at risk of slow attrition if deprived of the necessary funding required to carry on with their special multiple missions. The issue of support for the public teaching hospitals is internal to the extent that the public teaching hospitals can and must make management decisions regarding structural and operating adjustments to adapt to the changing climate while maintaining their missions of education, service, and research.

Education

The survival of these hospitals becomes an external issue when one reflects on the benefits to the health care system and to society as a whole derived from having hospitals in which education is a primary mission, not a fringe benefit. Education cannot be separated from patient care without losing an atmosphere in which current clinical practices are questioned, new approaches are tried, and the fruits of research are brought to the bedside. Each is a hallmark of a good teaching hospital.

Service

The presence of residents enables teaching hospitals to provide special programs which are impractical for other hospitals. The houseofficer is a well-trained physician who, as a member of the care team, provides much of the 24-hour physician coverage in a major teaching hospital, assuring for the patient immediate access to high level technical and professional expertise. Examples of these programs include specialized intensive care and trauma units. Other programs in tertiary care and outreach services have been developed by the public teaching hospitals in response to community needs and advancements in patient treatment programs. As examples:

- At University of Minnesota Hospitals & Clinics, transplant techniques keep challenging the frontiers of medicine. Additional breakthroughs appear close in genetics, neurology, and hypertension.
- The burn unit at St. Paul-Ramsey Medical Center typifies ongoing advancements in tertiary care; and SPRMC's innovative programs in mental health for the hearing impaired, their maternal-infant care program and medical care for international refugees all respond to the needs of the community in a less dramatic but equally important way.
- Hennepin County Medical Center is known for its programs in emergency care and also provides specialized services in such areas as adolescent health, acute alcoholism treatment, crisis care, sexual assault services, and health education.
- The Veterans Administration Medical Center has embarked on numerous pilot programs in geriatric care using an interdisciplinary approach to both care and teaching. This timely focus anticipates the expected tripling of the area's population of elderly veterans between now and 1990 and the aging of the general population.

Research

Perhaps most important, the combination of patients, faculty, students, and researchers in an academic environment fosters clinical research which leads to advances in prevention, diagnosis, treatment, and rehabilitation. These parties interact at the cutting-edge of the advances in medical sciences and in health care delivery. The public often fails to realize the immediate application of research. The Report of the Minnesota Medical Association Ad Hoc Committee on Financing Medical Education and Research in a Competitive Environment cited the case for continuing research succinctly: "Medical research must be continued if our present quality of life is to be improved. Research has made major contributions to the efficacy of medical care."[6]

Thus, the joint mission of teaching, patient care, research, and community service makes teaching hospitals unique regional resources—resources for care of the critically ill, for training health professionals to function in the 21st century, for service to the community, and for research to improve the quality and effectiveness of medical care. Members of society must recognize the worth of these resources and must determine the level of support for their valued contributions.

What Forces can be Mobilized to Support these Hospitals?

To obtain sufficient funding for these special missions of public teaching hospitals, an appropriate financing plan must be designed, *and* sufficient political power must be wielded to bring about needed action.

These complex institutions are expensive to operate. The Minnesota Coalition on Health Care Costs and the Minnesota Medical Association identified six and seven factors respectively which they viewed as elements affecting costs in teaching hospitals.[6,7] MAPTH in its report, "The Cost of Complexity: The Teaching Hospital"[8], identified eleven factors which increase the cost of operating teaching hospitals:

Undergraduate Medical Education
Graduate Medical Education
Other Health Care Professionals' Education
Mix of Patients
Care of the Indigent Patient
Hospital-Based Ambulatory Care
Training Programs in Preventive Medicine
Biomedical Research
Intensity of Care
New Medical Care Program Development
Internal/External Review and Regulation

Traditionally, the higher costs of teaching hospitals caused by these eleven factors have been offset by three funding sources—appropriations from various governmental agencies, patient service revenues, and philanthropy. Availability and amount of these three sources has diminished in the last few years while hospital operating costs have continued to rise.

The situation as it relates to graduate medical education should be highlighted. Even though resident education is thought to increase costs of a teaching hospital the benefit to a hospitalized patient is substantial and is directly related to the quality and intensity of the patient care the teaching hospitals are able to provide. Many of the advanced and special care programs of teaching hospitals are dependent upon the immediate, constant availability of the resident physician. In a sense, the future of medicine is dependent on the continuation of these important programs of education and the special hospitals which provide them. Yet, in the current competitive environment, neither new or traditional payers of health care are willing to support educational costs when lower cost providers of care who are not involved with education can easily be found. Although the DRG-based system for Medicare payments implemented in 1983 contains an increment for teaching hospitals, it is in part a proxy measure for severity, not exclusively a payment for teaching. Even its continuation is currently being debated in the Federal government.

The problem of financing resident education is further compounded since its costs have not been defined. Several methods for obtaining the cost elements have been developed although none has gained wide acceptance.

- A replacement costs approach attempts to determine what it would cost to operate the hospital at the same level of service without house officers.[9]
- Cost elements in teaching hospitals have been compared to non-teaching hospitals for matched sets of patients and/or comparable diagnoses in order to derive a "teaching affect" from the difference.[10,11]
- By adjusting for case-mix and case severity, attempts have been made to compare costs; these studies concluded that differences in case-mix and severity accounted for significant differences in costs between teaching and community hospitals.[12-15] Although several case-mix indices exist, no one index has gained broad support.

"The Study of the Financing of Graduate Medical Education" commissioned by the Department of Health & Human Services Assistant Secretary for Research is assessing resident education costs at 45 randomly selected community and teaching hospitals in the United States. The intent of the study is to derive comparative data to delineate a definitive methodology for assessing costs. Data from the study will not be available for at least another two years. Recognizing the urgent need for a working consensus on the costs of teaching and patient care, at least within the State of Minnesota. MAPTH is currently exploring methods of cost analysis to apply to its hospitals.

Financing Options

Several options for financing medical education have been suggested:

1. Readjustments to Medicare Payment Methods

Senator David Durenberger (R-MN) regards the financing of medical education costs as an important legislative item for the next two years. As one approach, in July of 1984, he held hearings on a proposal to fund the direct costs of graduate medical education through federal block grants which states would match and would allocate among teaching hospitals.

2. Reimbursements based on Case-Mix, Severity, and Diagnosis

Neither regulatory nor market solutions to the cost containment problem will work well unless payments for services are adjusted for case mix and severity. If Medicare and Medicaid were to adopt a common adjusted index which was equitable, it could become either a standard form of payment or a method of comparison.

3. Payment by Residents

Indebtedness incurred in training must be weighed against future earning power. Residents benefit directly from their own education and, thus, might be expected to contribute to it in the form of reduced stipends or increased tuition. As physicians' future earning power decreases and the cost of medical school increases sharply, however, medicine may become a prohibitively costly career choice for all but the wealthy.

4. Payment by Users

A tax on health plan premiums has been suggested as another alternative. This would place the burden on all those who are able to afford health insurance, not exclusively on those who become patients as is the current system.

5. Payment by Health Industry Employers

The delivery of health care is changing from a cottage industry to one of hugh health care conglomerates. These large health care firms will doubtless show increased interest in the training of the physicians they hire. As Vanselow cautioned, ". . . unless we pay more attention to the needs of those who will hire our graduates, we may find that we are turning out "educational Edsels".[16] Such large medical firms might conceivably pay for all or a portion of the costs of residency training to obtain the number and type of personnel they need.

6. Payment by Physicians

It has been suggested that faculty practice plans might support graduate medical education from revenues generated by professional fees. However, if the costs of supporting graduate medical education were recovered through increased professional fees, the result would only be a simple shift of responsibility from hospital reimbursement sources to professional service reimbursement sources.

7. Patient Service Revenues

Teaching hospitals could continue to charge more if their prices were adjusted for case-mix and if effective marketing and an increased interest in quality could attract groups willing to pay a known premium for quality care. This approach may well work for special services in which the teaching hospital has a monopoly and/or a clearly superior reputation. It is unlikely to attract general acute medical-surgical or ambulatory business in any volume unless some competing health plans find that closer association with a teaching hospital differentiates them from competitors and offers a marketing advantage.

Conclusions

Like the problem, and like teaching hospitals themselves, the solutions are complex. Not only must cost and financing options be weighed, but the educational process itself must be revamped to enable students to prudently use medical resources, or as Robert Maxwell put it, to learn "elegant parsimony."[17] And the numbers and types of trainees in all the health professions must be reasonably related to projections of future need.

In a recent issue of *The Lancet*, Walter Holland observed that cost control should *not* be our goal. He predicts that—whether through competition or regulation—cost control will soon be yesterday's problem. And tomorrow's problem, for which we should be planning today, will be obtaining value for the money expended. "If governments, in their efforts to control costs, do not adequately finance teaching hospitals, they are sacrificing the potential to tackle today's problem . . . ."[18] The quality of efficiently delivered health care will be the issue of the future.

While teaching hospitals may seem like an endangered species in an era of physician surplus and price-sensitive buyers, they are evolving quickly and are continuing to serve vital public roles. Indeed, the need and the opportunities may be even greater for teaching hospitals to function as regional resources developing and evaluating new technologies, researching clinical efficiencies, and improving patient care.

MAPTH members are committed to the preservation of their hospitals. Individually, each hospital is working hard to position itself as a viable competitor in the health delivery system. Each holds confident that they are efficient and effective health care providers. Yet, they are not solely providers of care. With additional responsibilities as educational and research institutions, they need support beyond the customary. Society mandates their service in these additional roles and society receives the benefits of their contributions. Society must recognize and support those activities which go beyond provision of care alone.

The members of MAPTH plan to document and justify their request for support. Of top priority to the organization are the efforts already underway to delineate their costs so that they can produce data which will demonstrate a fair and equitable approach to their extraordinary needs. The next priority will be continued progress toward realigning their hospital services both individually and collectively to ensure their positions in a cost competitive environment. A third priority involves increasing the awareness and understanding of the public about the teaching hospitals, their contributions, and issues threatening their futures. Through such a process, an informed and supportive public can actively participate in determining the future of the public teaching hospital.

With community support and understanding, and as our hospitals adapt to and prepare for changes in cost identification and funding, it is possible that Minnesota may become a national prototype for an evolving health care system which allows all parties to compete fairly, which encourages strong education, research, and patient service, and recognizes and rewards what Frey[19] has called "a conservative style of practice that accepts no compromise to quality."

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Sixth Annual Seminar for CME Directors
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Letters to the Editor

Letter to Minnesota Physicians:

University of Minnesota Medical School

The University of Minnesota, caught in the bind of rising costs and budget costs, has made a decision to emphasize graduate education and strive for excellence. This is wise, in my opinion, and all citizens should unite behind President Keller and the Board of Regents in this effort. The University is one of our most important resources.

Most Minnesotans will naturally have a particular interest in one University school or department. It is logical to expect that physicians and other health care persons would invest their thought, time, energy, and resources in support of the medical school. However, the bond between the medical school and its graduates has not been as strong as in some other schools of the University (this is not unique to Minnesota). In the past decade a price-conscious, competitive health care system has further weakened this bond and in some instances created frank antagonism. This is a dangerous circumstance which we must change!

The University Hospital is finding it increasingly difficult to fill its patient beds. This creates funding problems. Shortage of funds and lack of teaching material erode the crucial educational role of the school. Teaching and research suffer because the medical staff is forced to devote time and energy to compete in the market place in order to bring patients to their teaching beds.

Because of these facts alone, the medical school finds it increasingly difficult to attract outstanding teachers and researchers to its staff. As a result, our University and its medical school are diminished in stature. This reflects on all of Minnesota but especially upon its physicians and the health care system. It is in our vital interest as M.D.s, citizens and Minnesotans that brilliance and luster be restored to our University Medical School.

Writing as a physician, I have referred to the University of Minnesota-Minneapolis as "Our" medical school. This is true because it is the "Mother Lode" for physician supply to Minnesota and is the school most intimately intertwined with other graduate programs which may also touch us.

Minnesota physicians bear much responsibility for and possess a considerable influence over the kind of medical school we have in our state university. Therefore, individual physicians and physician organizations must be at the forefront of President Keller's "Drive for Excellence" as it relates to the University Medical School-Minneapolis. I envision that such a drive would produce significant change, some of which could be difficult and might be painful.

If we continue to be passive, the educational and research system at the University of Minnesota-Minneapolis Medical School faces increasing difficulty. However, if we mobilize our talent, resources, energy and time to change the direction of our school toward excellence, we can ensure that the Medical School-Minneapolis will lead the drive for excellence as it has in the past. To accomplish what is possible will require a combination of idealism, vision, wisdom, and courage. Good faith must be present in all parties.

I suggest that a meeting of thoughtful leadership persons representing the lay community as well as physicians from private practice and the medical school should be the starting point. They would:

1. Identify specific problems
2. Organize efforts to gather information
3. Decide under whose aegis the effort should go forth
4. Determine source of financing for the project

5. Solve the thorny issues troubling our school by involving knowledgeable lay persons, business leaders, legislators, MMA, and other medical organizations in the process.

The objective is worthy of our best effort. It is within our ability to accomplish.

Frank E. Johnson, M.D.
Past President
Minnesota Medical Association

A brief statement from the reader expressing an opinion regarding the above proposal would be appreciated and could be addressed to me at 801 North Tyrol Trail, Minneapolis 55416.

Echoes from Our Past

O Uplavici

Jack D. Key, M.A., M.S.*

Accurate references make any article more useful, more authoritative and more informative. Over the past few years a number of systematic studies of errors in published literature citations have been done. In several prestigious medical journals it was found that 13% to 55% of the references contained errors. The problem is certainly not new. Perhaps, the most famous example concerned the prototypical ghost - O. Uplavici. In 1887, a Czechoslovakian physician named Hlava published an important paper on dysentery. Somehow, while the information was being abstracted into German, the author's name vanished and his article's title ("O Uplavici"—On Dysentery) was transmogrified into a name amd entered into the medical literature. From time to time it demanded its mote of immortality as a reference cited in some authoritative work or other—until C. Dobell put the matter to rest in 1938.

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*Librarian, Mayo Clinic, Rochester, Minnesota.

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Dear Editors:

Vagotomy and Antrectomy as Treatment of Migraine

Abdominal surgery for vascular headache sounds startling, but it works. Several years ago, I noticed that migraine patients who had vagotomy and antrectomy for duodenal ulcers were relieved of their headaches as well as their ulcers post-operatively. In treating ulcers, the vagus nerve is cut because its efferent fibers, which constitute one-fifth of the nerve, regulate gastric acid secretion. Could the other four-fifths of the vagus fibers, which are afferent and whose function is unknown, be carrying transmissions which somehow set-off migraine when they reach the brain?

To test this hypothesis, I began a study using patients who were diagnosed as having common or classic migraine or cluster headache, by the Ad Hoc Committee criteria.[1] There is, of course, no animal model for migraine. Permission for the study was obtained from the Institutional Review Committee of my hospital. Informed consent was obtained after the nature of the procedure was explained to the patients.

Four patients had vagotomy, with pyloroplasty to prevent gastric retention, but without resection of stomach tissue. These patients had only fair relief of headache symptoms. They still developed severe headaches, though less frequently than pre-operatively.

Six migraine patients and one cluster headache patient had transabdominal truncal vagotomy and resection of the distal one-third of the stomach. All achieved virtually complete relief of severe headaches post-operatively. The relief appears to be permanent. One patient has gone nine years since surgery without recurrence of headaches.

It was apparent that my hypothesis was at least partially correct, but that antrectomy was more important than vagotomy in relieving headache. Antrectomy decreases blood levels of gastrin, a hormone which regulates gastric acid secretion, but has recently been found in the central nervous system. It is intriguing to speculate that interruption of vagus nerve transmission to the brain as well as the blood levels of intestinal hormones are important factors in the control of vascular headache, although the reason for the headache relief obtained remains unknown.

Vagotomy and antrectomy is a standard operation for duodenal ulcer and has been performed on thousands of patients. It carries a very low morbidity and mortality rate. In view of the great misery caused by intractable migraine and cluster headaches, I believe its use to treat these conditions should be broadcast. It avoids the complications of long-term drug use. It is a safe and effective prophylaxis for severe migraine and cluster headache.

John B. Brainard, M.D.
Saint Paul, Minnesota

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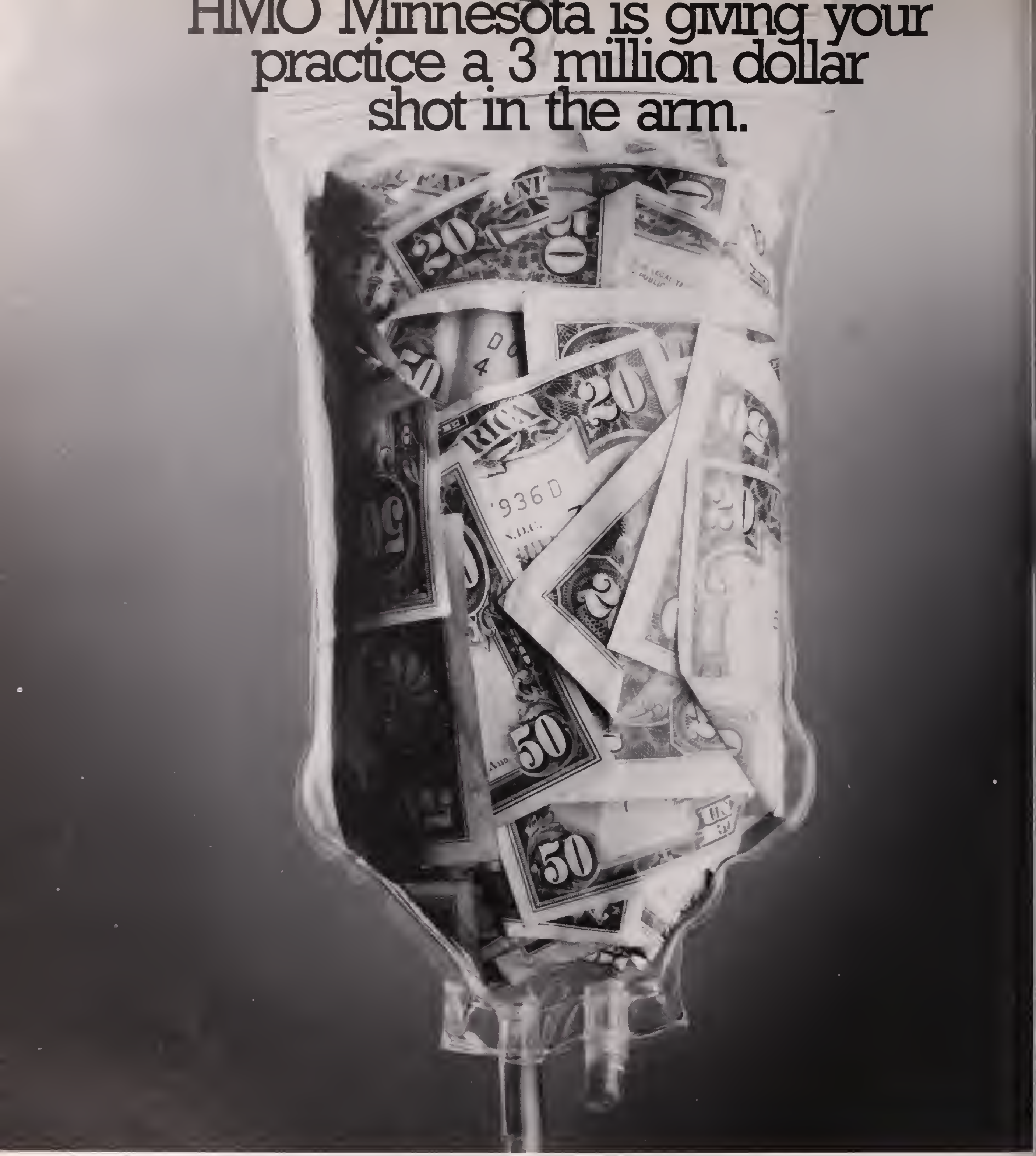

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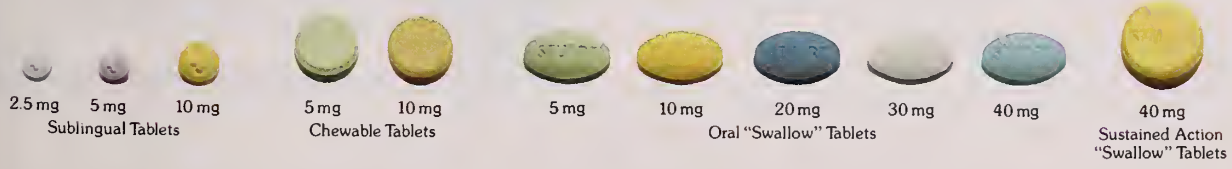

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INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg, below 90 mmHg) Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur. Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

Isosorbide dinitrate acts directly on vascular smooth muscle, therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women. SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus

Nursing Mothers: It is not known whether this drug is excreted in human milk Because many drugs are excreted in human milk caution should be exercised when SORBITRATE is administered to a nursing woman

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent. Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%) An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg), Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg); Sustained Action Tablets (40 mg)

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Physician Redistribution in Minnesota and the 84,000 Square Mile Classroom

JOHN E. VERBY, JR., M.D.*

In 1970 the average age of the rural family physician was over 55 years, and there was an estimated deficit of over 500 physicians or more in rural Minnesota. Within the next ten years, if conditions remained the same, the state would have been in a serious medical manpower "crisis deficit," particularly for the geographically isolated areas of northern Minnesota and its Canadian border.[1] The citizens and Legislature mandated that the Health Sciences and Minneapolis medical school create a medical educational effort to put physicians into the needy rural areas of Minnesota or risk removal of state funding of the medical school. Many medical school faculty meetings in the next year created the undergraduate junior medical student Rural Physician Associate Program (RPAP) which was born in September, 1971, with 23 students. The students were required to stay nine months in their rural communities with the seasoned practicing family physician/tutor, and had options to stay 12 months if it was mutually agreed upon by both student and physician.

As of this publication date, 486 students and over 500 physicians and other helping professionals have participated in this medical education effort, the only one of its kind in the U.S.A. Of the students who have participated in this unique program 289 are now in practice, and the remainder are finishing their formal medical education. Of those practicing, 167 are in rural areas (58%). Breakdown of specialties is as follows: 188 in family practice, 30-internal medicine, 10-general surgery, 5-OB/GYN, 5-peds/neonatology, 5-psychiatry, 3-medical subspecialties, 10-surgical subspecialties, 11-emergency medicine, and 23 in other specialties (PM&R, pathology, occupational/preventive medicine, nuclear medicine, sports medicine, dermatology, neurology, and radiology).

It is mandatory that all married medical students bring their spouses and children to live with them during the 9-12 month stint in rural Minnesota. The student physician and family are educated, conditioned and socialized into the rural community. All student participants pay tuition for two quarters (six months) and receive academic credit for this time. The other portion of time (three to six months) is free time not scheduled into the curriculum. All RPAP students graduate with their non-RPAP classmates at the same time. RPAP students come back to the medical school for three academic quarters following the rural experience to complete a curriculum similar to that of their classmates for the M.D. degree.

Ninety-eight percent of student participants through the fourteenth year (1984-85) state the experience was unique, and they would readily repeat it. Strong evidence from the student interviews and our educational research after the RPAP experience reveals statistically significant increases in RPAP students' perceived self confidence in clinical abilities (over and above their classmates).[2]

As of this writing, in all 87 Minnesota counties, there is at least one family physician for every 2,500 people. This has been accomplished by a number of major factors operating since the birth of RPAP in 1971. "SATELLITING" by groups of family physicians to nearby communities where they base their main work, has helped to decrease the absence of family physicians in communities of less than 1,500 population who have not been able to professionally and economically support a physician in our present-day health and disease care setting. The RPAP has been instrumental, complementary and supportive of physicians practicing in geographically isolated areas of our state such as Grand Marais, Ely, Cook and International Falls, as well as other rural Minnesota communities.

The majority of RPAP students in rural practice are in communities of less than 15,000 population. Rural practice is defined as communities with less than 50,000 population, located outside a 15 mile radius of a metropolitan area such as Minneapolis, St. Paul, Rochester or Duluth, Minnesota.

During the RPAP experience, each student, tutor (preceptor), and the community helping professionals receive visits from University of Minnesota medical school faculty from surgery, pediatrics, medicine, OB/GYN, neurology, psychiatry, PM&R and occasionally other specialties such as

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ENT. The students are closely observed doing a complete history and physical examination of a presenting patient in their rural consulting rooms. Audiovisual tapings of students doing a complete history at least three to four times during the year is essential by the medical school faculty.[3] RPAP medical staff have recognized during the past decade that the majority of RPAP student participants had not been completely observed doing a history and physical examination (after eight academic quarters in medical school). Extra emphasis is given to each RPAP student during the year regarding this importance and lasting clinical essential to caring for people, as recently researched by Kern, et al.[4], which included interpersonal skills, history-taking and physical examinations. RPAP's particular emphasis in the past 12 years has been interpersonally relating for understanding and persuasion.

RPAP emphasizes to all student participants the importance of recognizing that in 10% or more of the patient cases, the WRONG PERSON MAY BE PRESENTING. We then help the student to think of a sick family and/or a sick community as the patient.

RPAP has been involved in 86 rural community hospitals throughout the state of Minnesota in the past 14 years, with over 3,000 specialty faculty visits and free medical/surgical consultations to the people and medical professionals. This massive classroom of 84,000 square miles and its long term experience for junior medical students has been a remarkable phenomenon, not duplicated anywhere in the world to our knowledge. Even more impressive is the batallion of practicing physicians and helping professionals (over 500) who have given hundreds of thousands of hours of free instruction, over 2 million dollars in stipends to the students, absorbed all liability for the acts of service by these students, and accepted the fact that there is no commitment on the part of the student to return to rural areas of Minnesota or the U.S.A. The citizens of Minnesota have been truly blessed with many "freebees" from this program, which has been successful in physician redistribution. The biggest challenge for the future will be to sustain and maintain this effort!

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Cover Slides for Minnesota

We are looking for early spring and early summer scenes for covers for Minnesota Medicine. We would like vertical slides which work best for our format, but we will accept horizontal slides.

Bruce Nydahl, M.D.
Cover Editor

Carl O. Rice, M.D. Eulogy

Editor Emeritus
1898–1985

In delivering this eulogy, I am acting under strict orders from Carl. Last year when his frame began to buckle from his multiple ailments, he called me aside and said: "Dick, promise to say something about me after I die. Tell them what kind of man I was, who I was, what I did, and why I did it the way I did it. And, for God's sake, don't be too solemn about it."

For Everybody's Sake

For God's sake, for yours, Carl, and for the sake of those who listen to or read this eulogy, I shall follow your orders. They are, after all, doctor's orders. I shall not forsake you. As a surgeon might say, Carl, I aim for this unsolemn eulogy to *suture* your fancy.

An Admirer of Poets

What sort of man was Carl?

Well, to begin with, Carl admired poets. His favorite poet was another physician-writer, Doctor Oliver Wendell Holmes, who died in 1894, four years before Carl was born.

Carl's Favorite Poem

Carl's favorite poem was Holmes': "The Deacon's Masterpiece: or, The Wonderful One-Hoss Shay." A shay, as you know, is a light open carriage, usually with a hood. The poem concerned a certain shay, built by a parson to last 100 years. The parson constructed the shay so it would never wear out. Instead he programmed it to collapse in a heap at 100.

Holmes' shay, to Carl, was a metaphor of how a human life ought to be. He felt he was destined to ride high and handsome through a long life near or at his peak until the very end. So it was. His professional carriage rolled proudly on until 85 before his wheels came off under the weight of age and disease.

Framing the Eulogy

I am going to use Carl's favorite poem to frame this eulogy. I shall start by quoting its opening verse and end by reciting its closing verse. Between the opening and closing, I shall follow Carl's orders.

Opening

"Have you heard of the wonderful one-hoss shay
That was built in such a wonderful way
It ran for a hundred years to a day
And then, of a sudden, it - ay, but stay
I'll tell you what happened without delay
Scaring the parson into fits,

Presented: September 20, 1985, Saint Barnabas Chapel, Metropolitan Medical Center, Minneapolis, Minnesota

Frightening people out of their wits,
Have you heard of that I say."

Surgeon and Editor

As most of you know, Carl was editor of Minnesota Medicine from 1961 to 1971. He was my mentor. I have been editor since 1974.

As an editor, Carl remained very much the surgeon. He will forgive me, as I trust you will, if I characterize him as having a slashing style with incisive wit and a cutting edge.

And why not? In a real sense, an editor is a surgeon. It is he who cuts thousands of words of dead wood, organizes and tightens, reshapes sentences, puts in grammar and punctuation, and still retains the author's article, although authors doubt this as their articles are being eviscerated.

Partly because of the drastic surgery he imposed on authors, Carl emerged as an excellent editor. So good, in fact, that *Minnesota Medicine* was selected as the best state journal in the United States in 1967.

Speaking of Punctuation

Speaking of punctuation, you wouldn't mind, would you, Carl, if I hyphenated this eulogy and made an explanation point by telling the quotable but questionable story of the dashing but punctual surgeon who made his marks by converting colons into semicolons to prevent patients from becoming periods, I knew you wouldn't mind. After all, Carl, orders are orders.

What Kind of Man

What kind of man was Carl?

The first word that leaps to mind is "fearless." His lack of fear was as if fierce Vikings' blood flowed freely in his veins. In any event, Carl was absolutely unafraid. He would take on anything or anybody at any time without hesitation if he thought he was right. In the fifties, he battled the medical establishment on the issue of fee-splitting between surgeons and practitioners. Later he clashed with prominent trustees of the Minnesota Medical Association because he thought they were trying to politicize *his* journal.

Physically Fearless

He was physically fearless, too.

He took up skiing late in life and continued to rocket down the slopes past eighty. You might say at eighty he was going like sixty. When he challenged me, a callow youth of 50, to ski, I informed him I was going downhill fast enough.

"Intolerant"

The next word that comes to mind, curiously enough, is "intolerant." Carl was intolerant of sloppiness and shoddiness and weakness. For example, he could not and would not tolerate obesity, smoking, or laziness, or bad health habits. He didn't like slovenly writing either. He once told a contributor to Minnesota Medicine: "Although this is badly written, you also have nothing to say."

Class and Style

Carl had class and style. His was a quest for the best. He believed in doing things right, or not at all. After he graduated from the University of Minnesota Medical School, he sought the best surgical training available. He was the first surgical resident under Owen Wagensteen; he spent time at the Mayo Clinic and did a fellowship in Switzerland under a world-renowned surgeon. After Switzerland, he remained European in his outlook all his life.

A Stylish Crusader

Everyone who saw Carl dress for a formal occasion, with a flowing silk scarf tossed casually around his neck, a red fluted shirt tucked smartly into a black cumberbund, a gold medallion swinging from his neck, and colorful military medals dangling from his lapel, recognized Carl as a stylish crusader for fashion—a man with dash and flair. When Carl entered a room, all eyes were drawn to him. He had presence and magnetism.

Creative Artist

Carl may have been trained to be a compulsive scientist, but he had the soul of a creative artist. His entire life was a titanic war waged between his left and his right brain. His right brain usually won. He didn't write editorials; he gushed soliloquies. He did not practice medicine; he campaigned for it with philosophical zeal. He didn't do surgery; he invented new surgical tools and new operations.

He and Owen Wagensteen were the first to show surgeons how to approach the problem of imperforate anus; he was the first to inject procaine into fracture sites to make fracture reduction painless; and he was the man who came up with the idea of swaged sutures, now used everywhere in the world; and he was the surgeon who coined the name "adenomammectomy," an operation he perfected for reducing breast size.

Art in the Rest of His Life

His creative artistry spilled over into other parts of his life. He was a writer of considerable skill. He wrote articles, editorials, verse, and books. He was an artist. He specialized in humorous cartoons and in wood carvings. As a carver, he was able to transform tree roots into caricatures of historical and present day personalities.

Above all, he was an enthusiastic gardener. Perhaps horticulturist is a better term. He had a passion for flowers, plants, trees, and even field crops. Among the latter, he played the field, but he had a special eye for potatoes. Whatever the species, he was forever tilling, tending, and toiling for all things that grew.

Excuse the Earthy Puns

Carl, if you'll excuse the puns, and again, I'm simply acting under your demand for nonsolemnity, you were a soul of the soil with a deeply rooted sense of humus. No wonder you had a furrowed brow. You liked nothing better than to be a man out standing in your own field, whether it was your seven acre estate in Edina or your 800 acre farm in South Dakota. You were living proof that the old expression—"He who throws dirt loses ground"—was groundless.

Loyalty and Love

And lastly, Carl was a man with an almost fanatical sense of loyalty and love. He was loyal and loving to his Lili, his family, the University of Minnesota, and to the Mayo Clinic. I don't think it is stretching the language to say that the 61 year relationship between Lili and him was a life-long love affair. She was everything to him—lover, mother of his children, companion, helpmate, sounding board, and fellow skier. She was the apple of his eye, his heart of hearts, and his Lili of the valley.

Closing

Now, the closing verse:
"All at once the horse stood still,
Close by the meet'n-house on the hill.
First a shiver, and then a thrill,
Then something decidedly like a spill,

And the parson sitting upon a rock,
At half past nine by meet'n'house clock,
Just the hour the earthquake shock!
What do you think the parson found,
When he got up and stared around?
The poor old chaise in a heap or mound,
As if it had been to the mill and ground!
You see, of course, if you're not a dunce,
How it went to pieces all at once.
All at once, and nothing first,
Just as bubbles do when they burst.

End of the wonderful one-hoss shay.
Logic is logic. That's all I say."

Richard L. Reece, M.D.
Minneapolis

Two Careers

S. R. MAXEINER, JR., M.D.*

We shared quarters, he and I, during our surgical internships. I didn't understand him very well. I was absorbed in the management of a patient with persisting hypochloremic alkalosis after an operation for pyloric obstruction. I couldn't make that alkalosis respond even with ammonium chloride (which was pretty aggressive treatment in those days). But he seemed more interested in tinkering around the laboratory doing blood tests and measuring things.

Several years later I was happily engaged in building a surgical practice, accepting long hours and frequent emergencies in hopes of earning a reputation for competence and service. I was proud of my knowledge of electrolyte balance and potassium metabolism; my patients really did pretty well. He was in academic surgery, assistant professor or something. His chief interest lay in what happened to dogs when he drew blood out of them, and then put it back again.

More years went by. I was faithful in Continuing Medical Education. Whenever a new idea proved to be beneficial, I was eager to apply it to the care of my own patients. At one of these courses my old friend lectured on pulmonary function, and the ways that he could influence acute insufficiency. Dogs again.

And now, three decades have passed. My surgical capabilities have never been so great. It's not that I can cut and sew any better, nor just that my relationships with patients are honest and caring. Rather, this golden time comes from a range and depth of supportive care that stifles infection, feeds metabolism, and supports failing organs. I saw my old friend recently, now a professor. Was he enjoying this fullness of our capacity to serve our surgical patients? He was really thinking more about host responses and the possibilities in selective enhancement of immunologic capabilities. In dogs, I think it was.

I got to thinking about this the other day, while repairing a hernia for an octogenarian Medicare out-patient. Isn't it ironic. This incredible development of surgical art represents the highest capability in the whole history of man's efforts to heal himself. But it earns from its beneficiaries neither enthusiasm nor support, but rather suspicion and retrenchment. My patients come to me now by payment mechanisms or by contract. They don't seem to wonder whether I have a reputation for competence and service. My friend's university hospital is struggling with DRGs, and he just doesn't know where education and research funds will come from.

He and I have served very different masters, in our two careers. But we have shared, in a wonderful time, a constantly rising tide of scientific advancement and clinical accomplishment. I think we have each contributed, in our own way, and can look back without regrets. It is looking forward that we worry about. Will this tide of progress be allowed to ebb? Could all this capacity to learn and to serve be just stranded on the beach?

---

*Edina, Minnesota

Cover Photograph
"Waterfalls at Stairway Portage, BWCA"

In the upper right part of the waterfall one can, among the veils shaped by the falling water, see the elf of September raising her hands in supplication asking that winter may not come.

The photo was taken by Dr. Carl M. Kjellstrand, Professor of Medicine and Surgery, University of Minnesota Medical School and Hennepin County Medical Center, Minneapolis.

Film used was Kodachrome 64ASA. The camera was an Olympus II with a 50 mm standard Olympus lens. The exposure time was 1 second.

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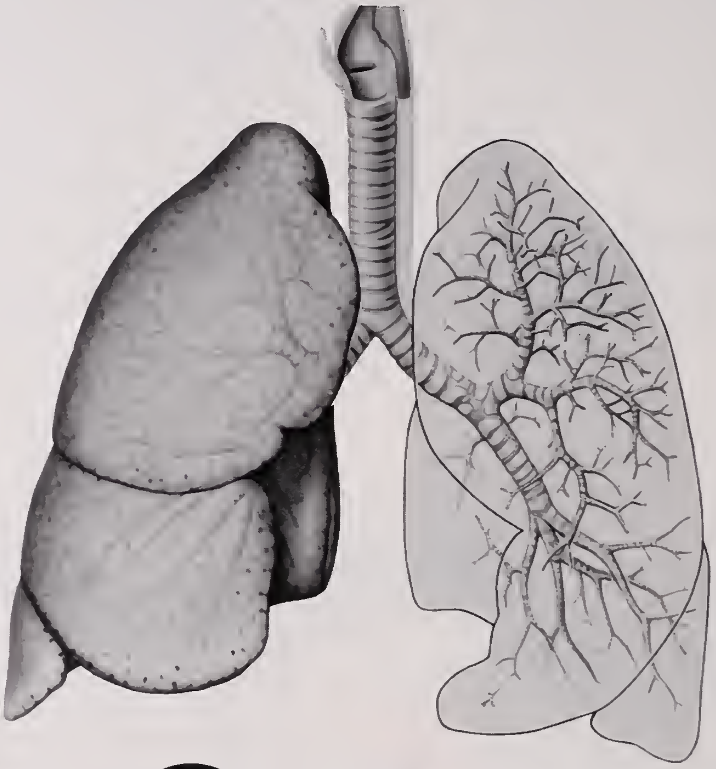

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Brief Summary Consult the package literature for prescribing information

Indications and Usage: Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae)*, *Haemophilus influenzae* and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication. Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES

Antibiotics, including Ceclor should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins), therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life-threatening

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone In moderate to severe cases, management should include sigmoidoscopy appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile* Other causes of colitis should be ruled out

Precautions: *General Precautions* — If an allergic reaction to Ceclor® (cefaclor, Lilly) occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents e g , pressor amines, antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis

Usage in Pregnancy -- Pregnancy Category B — Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor® (cefaclor, Lilly) There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed

Nursing Mothers — Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18, 0 20, 0 21, and 0 16 mcg/ml at two, three, four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor is administered to a nursing woman

Usage in Children — Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions: Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor. Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain — Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic — Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematopoietic — Transient fluctuations in leukocyte count predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal — Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

(0617829)

Note Ceclor® (cefaclor, Lilly) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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The Apprenticeship System and the Development of Early Medical Schools in America

RAYMOND C. BONNABEAU, JR., M.D., PH.D.*

Prior to 1790, there were only three medical schools in America that granted degrees to matriculating students. The first was established in Philadelphia at the University of Pennsylvania, in 1765, the second in New York City at King's College (Columbia University) in 1768, and the third at Harvard College (Boston) in 1782. As noted, these were all in urban areas with large (for the period) populations. Prior to that time and into the 19th century, the apprentice system formed a major part of a physician's training, especially in the area of clinical medicine. Literally, therefore, all well-known physicians of the colonial period had been apprenticed at one time or another. Dr. John Redman, who had apprenticed to him nearly all of Philadelphia's aspiring physicians, had, himself, been an apprentice to Dr. John Kearsly, Sr. in 1743-44.

Although later reduced to three years, the apprenticeship system earlier in the colonial period was of varying length (John Morgan, for instance, was apprenticed to Redman for six years). The apprenticeship itself consisted in a twofold program: reading medicine and riding (seeing patients) with the preceptor physician. This, of course, left a great deal of variability in each program, since the ability of the student to read largely depended on the preceptor's available library, his willingness to let the student use it, and, of course, the student's desire to avail himself of it. During, for instance, Morgan's stay with Redman, he read the works of Boerhaave, Van Swieten, and Thomas Sydenham, and had to copy Redman's notes of Alexander Monroe's lectures that Redman had taken while at Edinburgh. After a period of his apprenticeship time had elapsed, Morgan was able to see patients alone. Redman obviously treated his apprentices as his sons, and, no doubt, represented what was the best training in the colonies. Not all students were that lucky.

The glaring defects of the apprentice system were obvious to the physicians of colonial times since those who could went to London, Edinburgh, and Leyden to receive their M.D. degrees to make up for the obvious deficiencies of a pure apprentice type of training. Thus, Redman had received his M.D. degree from Leyden in 1748, and John Morgan, following his apprenticeship with Redman, received his M.D. from Edinburgh in 1763. This period of further training in Europe was, however, relegated to a monied few.

Even though three medical schools existed in the country by 1790, it only minimally offset the educational problem, and the apprentice system continued to play an ever-increasing part in medical education in America.

By the early 1800s, the aspiring physician was apprenticed to a preceptor for three years at a cost of approximately $100 per year. At the end of this period, he was given a certificate that stated he had good ability and had diligently pursued his studies. This, obviously, meant something only if the person reading it personally knew, or knew of, the preceptor.

This problem of apprentice credibility secondarily influenced the medical licensing laws (that were themselves having a checquered existence), since licensing was one method of attempting to assure physician competency to the community at large.

As the population expanded, more people wished to enter the field of medicine. Many of these were without the financial means to travel to Europe to complete their training. At the same time, physicians acting as preceptors realized that it would be more economical if academic subjects were taught in classrooms rather than to have each preceptor in a given locale teach them independently, at varying degrees of competency. This realization, plus the inability of the apprentice system to teach subjects requiring special material, such as cadavers for anatomy, led to the development of new medical schools outside urban centers in rural areas. This was a result also of the inadequate transportation of the time, which made it difficult or impossible to get to the three northeastern schools. The average student in these farming areas was usually poor and could not afford the high tuition of the city schools, even if he could get there.** They were unwilling to take out loans, since the earning ability of a practicing physician, due to an extremely high percentage of unpaid fees, made loan repayment extremely difficult. In 1850, the Shattuck report of the Massachusetts Sanitary Commission noted that the average Massachusetts physician collected only 75 percent of his annual earnings. Since this included the Boston city physicians, the amount was even lower in the rural areas where the poorer clientele lived. Many physicians, because of their inability to collect fees, found it necessary to hold other jobs as well. Daniel Drake, for instance, opened a drug store in Cincinnati with his brother, Benjamin. Besides drugs, he sold groceries, paints, surgical instruments, stationery and books. Malthus A. Ward, who was a prominent physician in Salem, Massachusetts from 1823 to 1831, and later professor of Natural History at the University of Georgia, practiced medicine from 1815 to 1823 as a frontier physician, moving to three towns in Pennsylvania and Indiana in a painstaking attempt to earn enough money to pay off his debts and return East.

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*Department of Surgery, Bethesda Lutheran Medical Center, St. Paul, Minnesota, and University of Minnesota Health Sciences Center, Minneapolis, Minnesota.

**Two semesters (the full course) in a rural medical school in 1820, cost the student approximately $98, while one of the Boston schools cost $225 for the same time period, leading to the M.D. degree.

Thus, the need for rural medical schools existed. There was also a need for schools to supply physicians to the rural population where the demand was the greatest. Following training the physicians could settle in these areas without necessitating extensive travel. The first of these country schools was established by Nathan Smith at Dartmouth in 1798. Smith himself lectured on anatomy, surgery, chemistry, and the theory and practice of physics. Other schools which opened in rural areas during this period included Yale and Fairfield (N.Y.) in 1812, and Castleton, in Vermont in 1823. All these schools taught up-to-date medical practice with professors who had been largely trained in Europe and thus held very high academic standards. The schools themselves were primarily educational institutions, being nonprofit organizations, with support coming in the form of grants, as well as from private individuals. Their training was the equivalent of the prestigious northeastern city schools.

The development of these and other medical schools, coupled with the apprenticeship system, comprised the backbone of medical education in the early 19th century. A student would be apprenticed for 28 months, while attending two sets of medical school lectures as two separate terms (repeating the same subjects) of approximately four months each,† in successive years, for eight months, or an overall total of three years, with an award of the M.D., following a final oral examination. Most schools had an average of seven faculty members, although four were considered a minimum. The curriculum consisted of chemistry, anatomy and physiology (usually combined), as basic sciences, as well as the theory of physics (i.e., the etiology of disease), and the treatment of disease. This phase included materia medica, (botany, mineralogy, and zoology, the latter for the purpose of studying leeches and other parasites). Surgery was taught in this group of subjects, along with midwifery.

As new discoveries were made in medicine, these were added to the individual school's curriculum. Thus, at Castleton, ophthalmology was added in 1841, as were pathology, auscultation, percussion, and microscopic anatomy in 1842. In 1844, physical diagnosis; 1846, toxicology; 1848, dentistry; 1851, organic chemistry; and 1860, pathological chemistry joined the curriculum.

Progress in the form of the railroads brought an end to these rural medical schools when this mode of transportation made it easier to reach the schools in the larger cities. In addition to this, the limited clinical as well as anatomical material, the new teaching dispensaries and hospitals being developed in the eastern city schools and a healthier economy, spelled the finish of the country schools as the 19th century entered its second 50 years.

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†These would vary from school to school. At Fairfield the terms were 12 weeks; Castleton, 12-15 weeks, and at Berkshire, 15 weeks. The AMA, when founded in 1847, recommended that all schools standardize their terms at six months.

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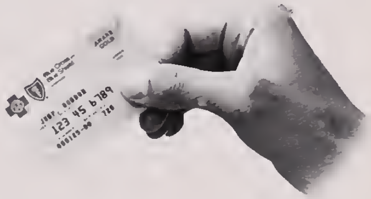

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Runner's Anemia or "I Wonder Where the Blood Went"

A Personal Experience

PETER J. DORSEN, M.D.*

An anecdotal case report of an iron deficiency anemia in a healthy athlete. A review of "Runner's Anemia: hemolysis, "pseudoanemia" and gastrointestinal blood loss anemia detected by the Hemo-Quant Assay.

My skills as a diagnostician were put to the test as I watched my hemoglobin slide from 14 in 1982 to 13 in 1983, to 12.4 during the 1985 ski season and 12.0g% at its culmination. (Normal male hemoglobin: 14-17g%; normal female hemoglobin: 12-15g%.) Rejecting the age-old advice that "A physician who treats himself has a fool for a patient," I first checked my serum iron levels and ferritin, a test of the body's iron stores, and found them low, consistent with an iron deficient anemia.

Ordinarily, among the general population, an iron deficiency anemia is a signal for an aggressive search of blood loss from colon polyps, stress ulcers, or even an early "G.I." malignancy. I developed wet armpits, checked my stools for blood and, after finding them negative, breathed a sigh of relief and consulted four physicians. When I got four different recommendations as to what I should do, I knew I needed to review runner's or sportsman's anemia in the medical literature. I also accepted the advice of an esteemed gastroenterologist and friend, and began Fergon, an iron supplement, three times a day with meals.

Many explanations for this type of anemia have been proposed: (1) Hemolysis of red cells (a rapid and destructive turnover perhaps just from the mechanical trauma from pounding hard pavement); (2) Hematuria (either gross blood as in the dark red urine of "March Hematuria" among cadets or an "invisible" microscopic hematuria); (3) Inhibition of red cell production (erythropoiesis); (4) Decreased absorption of iron (diarrhea or malabsorption conditions like tropical sprue); (5) Iron loss through sweating; (6) A "pseudoanemia," a "relative" drop in hemoglobin due to increased plasma volume; (7) "GI" (Gastrointestinal) blood loss.[1]

Physiologically, we only lose 1 mg of iron daily or 0.5 mg more if we are female and menstruating. The iron from red cell destruction goes into our iron pool and is recycled. Usually, if we eat meat, we add to our supply 10 to 20 mg of iron daily of which 5-10% is absorbed. Heme iron (from meat) is absorbed better than most non-heme iron (vegetarian). Typical iron deficiency anemia develops when there is (1) An increased requirement for iron; (2) Inadequate dietary intake (Beware, uninformed vegetarian athletes!); (3) Decreased intestinal absorption; or (4) Blood loss.[2]

Norwegian cadets had increased hemolysis during vigorous basic training. They also had high epinephrine levels, increasing both the osmotic and mechanical fragility of their erythrocytes.[3] 9/50 runners in the Boston Marathon had hematuria which appeared to come from trauma to the posterior bladder (men only).[4] Of 113 Danish joggers and competition runners, 33 women and 80 men showed an iron deficiency anemia. These competition runners were found to have low iron concentrations due to an increased loss of red cells from their kidneys which were vasoconstricted from the stress of racing. There is a direct correlation between circulating blood hemoglobin and maximum endurance capacity or VO_2 Max. When these athletes received iron replacement, their hemoglobin rose, and many reported personal bests in competition.[5]

There is also the condition we all dread, "Runners' Trots"[6]: abdominal cramping, bloating, frequency, watery bowel movements, occurring during rapid increases in training or races. During maximal exercise, blood flow to the gut is reduced by 80%.[7] The decrease in blood flow appears less in trained than in untrained individuals but enough to produce ischemia. Less conditioned runners bled more than their trained counterparts from such ischemia.[8] Athletes are known to abuse aspirin and non-steroidal anti-inflamatory medications like motrin or indocin which can produce "microbleeds" from gastritis.[9]

Pseudoanemia"[10] is an increased plasma volume and a "relatively" low hemoglobin. Actually, such athletes have a higher red cell mass per kilogram body weight. It is argued that such a low hemoglobin is an optimal compromise between oxygen-carrying capacity and blood viscosity.[11]

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*Minneapolis, Minnesota.

Seven of 32 marathon runners (especially the younger, highly exertional runners) had hidden "G.I." blood loss attributed to intestinal ischemia or stress gastritis but in this study unrelated to the use of aspirin or nonsteroids.[12]

Recently, local investigators showed that competitive, long distance running induced gastrointestinal blood loss, iron deficiency anemia and suboptimal race performances. They also may simplify and even revolutionize diagnosis with the new HemoQuant Assay. (We have used the hemoccult test up til now.) They found a rise in stool blood after races and peaking 54 hours later. Seventeen of 24 runners showed a drop in hemoglobin; five were iron deficient.

My recommendation is that ALL athletes should check their hemoglobin when they are competitively training. If the hemoglobin is down, there are simple and relatively inexpensive tests to identify the type of anemia, to locate and then define the site of blood loss. Iron replacement is simple, inexpensive, and has improved the personal bests of many athletes. The vegetarian athlete must examine his or her diet as well to ensure it meets the needs of vigorous training and racing.

Approximately two and one-half months after taking iron and tapering vigorous training, my hemoglobin has risen to 13.5g%. I plan to continue the Fergon for another month and serially check hemoglobins.

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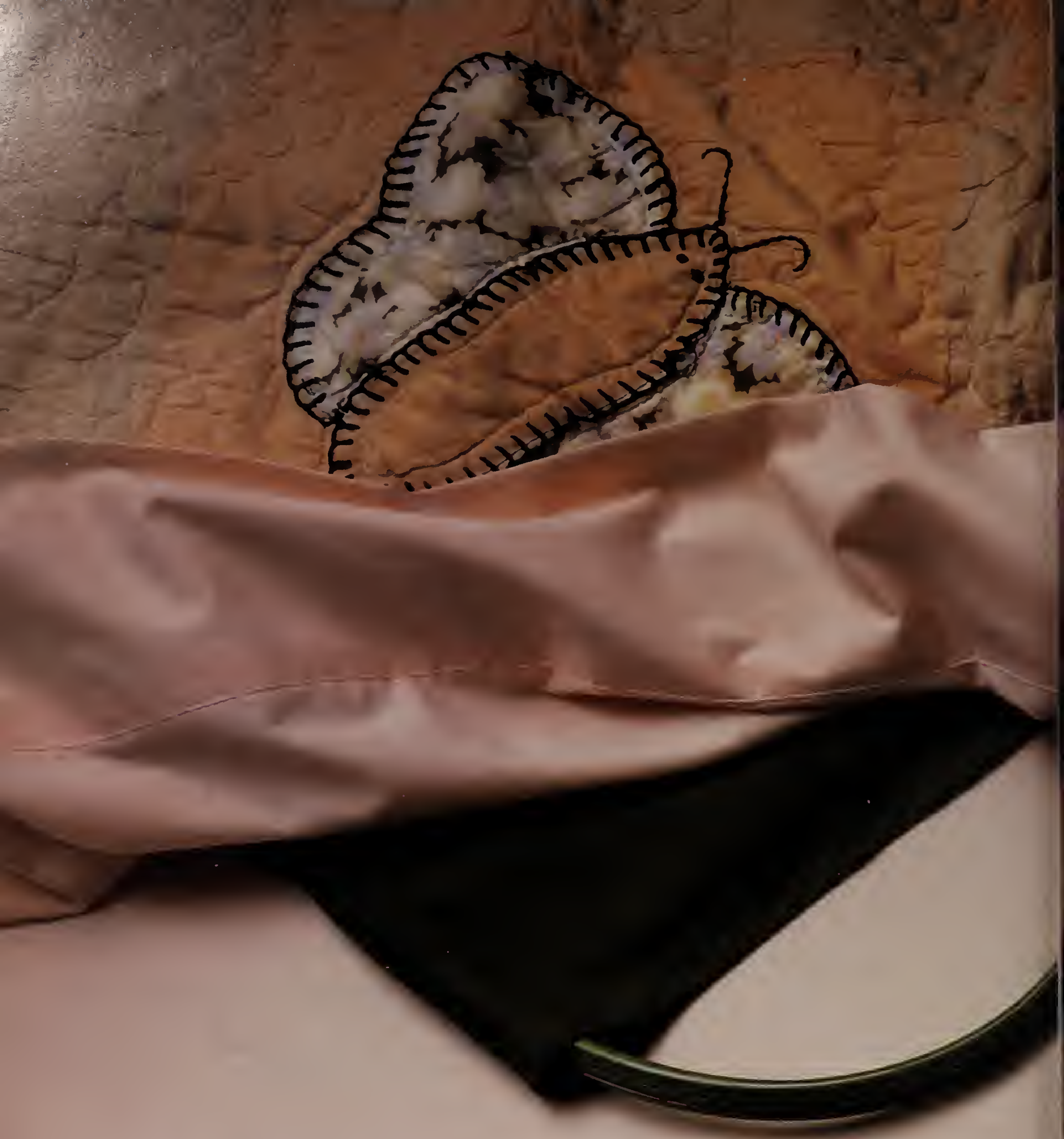

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A Child with Obstructive Sleep Apnea

THEODORE M. BERMAN, M.D., F.A.C.P. + *;
MARK K. WEDEL, M.F., F.A.C.P. + **;
BARRY J. BERGEN, M.D.†;
and CARL A. BROWN, M.D.††

We report a child with obstructive sleep apnea whose main symptom was enuresis. Her enuresis resolved and her sleep study became normal following tonsillectomy. Complications of sleep apnea can be avoided by early diagnosis and treatment.

Obstructive sleep apnea (O.S.A.), although more common in adults, also occurs in children. We report a case of O.S.A. in a six-year-old girl who markedly improved after tonsillectomy.

Case Report

A six-year-old girl was referred to the Methodist Sleep Disorders Program for evaluation of possible O.S.A. At age two, her parents first noticed nocturnal snoring. At age four she began having many spells of "breath holding" during sleep associated with loud snoring. At age four and a half she started to wet the bed one to two times per night. She complained of a "stuffy nose" and was referred to an allergist and otolaryngologist. The initial diagnosis was non-allergic rhinitis with enlarged turbinates. A trial of a decongestantantihistamine did not relieve her nasal "stuffiness." At age five adenoidectomy was done because of persistent snoring and breathholding. Her symptoms did not improve after the surgery. A bed wetting alarm device was tried for her enuresis, but was unsuccessful.

Her parents did not notice excessive daytime sleepiness or behavior problems, and her school performance was satisfactory.

On physical examination, her tonsils were enlarged (Figure 1). Most of the tonsillar enlargement extended into the hypopharynx, making it difficult to appreciate the enlargement without indirect mirror and lighting.

Because of the suspicion of sleep apnea, overnight polysomnography was done as previously described by us.[1] A portion of her initial sleep study is shown in Figure 2. The overnight study documented severe O.S.A. Her apnea index revealed 89 apneas per hour of sleep, with a total of 555 apneas during the night. During these apneic periods her heart rate varied between 48 and 144 beats per minute, and oxygen saturation dropped as low as 72 percent (PO_2 less than 40).

Tonsillectomy was recommended because of the high apnea index, the enuresis, and the enlarged tonsils. On the first postoperative night her snoring and enuresis had stopped. Neither had recurred.

A limited (four channel overnight respiratory recording) repeat sleep study was done 10 weeks after her surgery. The study was normal. Only one apnea was seen during the entire night and no brady-tachyarrhythmias or desaturation were present. A portion of the normal study is shown in Figure 3.

She continues to do well nine months after the tonsillectomy. Her parents also report that she

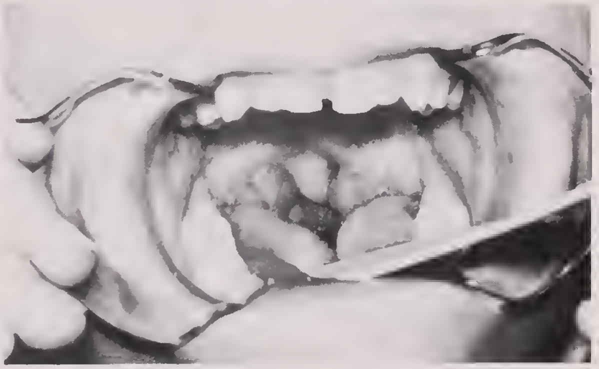

Fig. 1 - Enlarged tonsils as seen just before surgery.

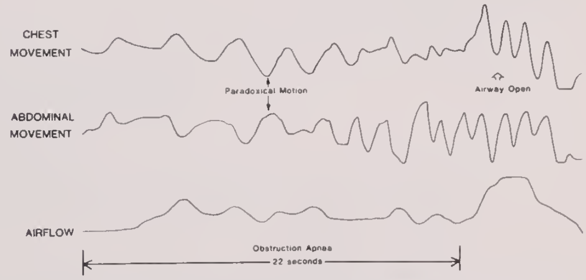

Fig. 2 - A portion of patient's initial sleep study showing a 22 second period of obstructive apnea causing oxygen desaturation.

+ Co-Directors of the Methodist Hospital Sleep Disorders Program.

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Reprint requests to: Methodist Hospital Sleep Disorders Program, 6500 Excelsior Blvd., St. Louis Park, MN 55426.

has more energy in the mornings.

Discussion

Our patient had some of the typical symptoms seen in children with O.S.A. Frank, et al., studied 32 children with O.S.A. between the ages of two and 14.[2] The most common symptoms were snoring and breathholding in 91 and 81 percent respectively. Enuresis, which was a major problem for our patient, was seen in 33 percent of children greater than four years old. Unlike adults, excessive daytime sleepiness was seen in less than one third of the patients and was usually mild.

The physical examination in children with O.S.A. may be abnormal. Hypertrophied tonsils, retrognathia, macroglossia, and various congenital maxillofacial malformations all are associated with sleep apnea.[3]

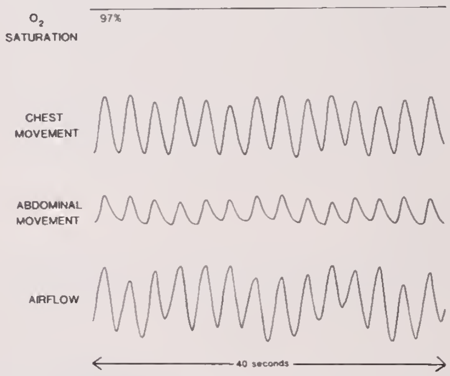

Fig. 3 - A portion of patient's follow-up sleep study showing no apneas.

Other series have shown that O.S.A. in children can cause more serious symptoms.[4] Brouillette, et al., studied 22 infants and children with O.S.A. Sixteen of their 22 patients developed serious complications: cor pulmonale in 12 (55 percent), failure to thrive in six (27 percent), permanent neurologic abnormalities in two (9 percent), and behavioral problems, daytime sleepiness, or developmental delays in five (23 percent).

The authors also noted an average delay of 23 months before the patients were referred for appropriate evaluation. They emphasize that the delays probably occurred for two reasons: firstly, O.S.A. in children has not received much attention in the literature, and secondly, most of these children appear normal when awake, and do not complain of daytime sleepiness.

Adenotonsillectomy is an effective treatment for most cases of O.S.A. in children who do not have associated maxillofacial abnormalities.[5,6] Marked reduction in sleep disordered breathing and subjective clinical improvement is the usual result. Snoring, enuresis, and daytime sleepiness (if present) usually disappear following surgery.

We emphasize that a high index of suspicion is needed to diagnosis O.S.A. in children. We think that any child who snores along with new enuresis, daytime sleepiness, behavioral problems, or failure to thrive should be suspected of having O.S.A. Early diagnosis and treatment should avoid some of the serious complications that can result from untreated O.S.A.

Acknowledgment

The authors thank Dr. Paul Wernick for referring this patient, and the parents of our patient for their assistance.

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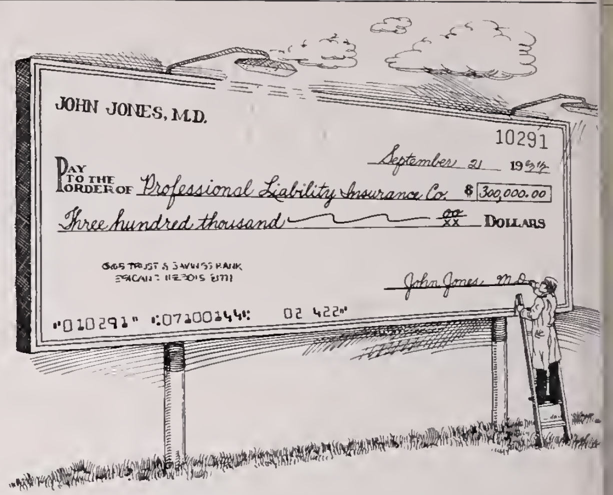
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Pathology

MMIE RISK MANAGEMENT COMMITTEE;
FRANK E. JOHNSON, M.D.,
CHAIRMAN

Allegation

An error in diagnosis which delayed treatment and resulted in the patient's death.

Facts of Case

The patient, a 79-year-old female, was hospitalized by her primary physician on November 19, 1983, for complaints of weakness and syncope. During the course of her hospitalization, abnormal liver studies were noted. No etiology for the patient's complaints was found. She was transferred to a regional facility on November 29 for further diagnostic workup. As part of the workup, bone marrow aspiration and core biopsies were performed. These were interpreted by Dr. X, the pathologist, as showing micrograms consistent with sarcoidosis. Conservative treatment was initiated on the basis of this diagnosis. The patient was discharged on December 16, 1983, to return to the care of her primary physician.

Following her discharge, the patient became progressively weaker and was readmitted to the hospital on December 23, 1983. In view of her worsening condition, steroid treatment was begun, and the patient seemed to improve. She was discharged on December 29.

Two days after discharge, the patient again experienced an episode of weakness. Medication was adjusted, but she continued to be weak and lethargic and was again hospitalized on January 9, 1984. Because of the lack of improvement with steroid treatment, the primary physician questioned whether some other systemic disease process was present. Consultation was obtained. A blood test to confirm the diagnosis of sarcoidosis was negative.

On January 10, 1984, a second bone marrow aspiration was performed and sent to Dr. X for interpretation. The patient's condition began to deteriorate, and she was transferred to a large metropolitan hospital on January 11. Dr. X reported that the second bone marrow examination showed diffuse granulomas consistent with histoplasmosis. Aggressive treatment with Amphotericin B was unsuccessful, and the patient expired on January 23, 1984.

Disposition

After negotiations with the claimant's attorney, this claim was settled for $50,000 on behalf of Dr. X.

Reasons for Settlement

After reviewing the slides from the first bone marrow aspiration and biopsy, Dr. X admitted that histoplasma was present. Dr. X stated that when he reviewed the original slides, he saw some material on the edges of the slides which was possibly histoplasma, but felt at the time it represented contaminant from the control slides. Based upon this assumption, he concluded that the granulomas were consistent with sarcoidosis and did not report the possibility of histoplasmosis.

The presence of histoplasma on the original slides was confirmed by expert review. In addition, the expert stated that had the correct diagnosis been made and appropriate treatment begun in December of 1983, the patient would have had an 85%-90% chance of surviving and returning to her normal state of health.

Risk Management Comments

Misdiagnosis can result in serious patient injury. If there is any question about the pathology findings, the examination should be repeated or the primary physician advised on the questionable findings. Such a course of action would alert the primary physician to more than one possible diagnosis so that followup testing can be done in light of the patient's clinical picture. Since the primary physician generally relies on the pathologist's diagnosis to determine treatment, primary liability will likely be imposed on the pathologist for misdiagnosis resulting in patient injury.

We know that mental and physical fatigue can result in a greater potential for error. Physicians should be aware of their own mental status and take actions to relieve fatigue and stress before errors occur. After spending an eighthour day reviewing pathology slides, it may be difficult to give full attention and concentration to each slide. But, constant vigilance is required to prevent the human errors which can result in an unnecessary patient injury.

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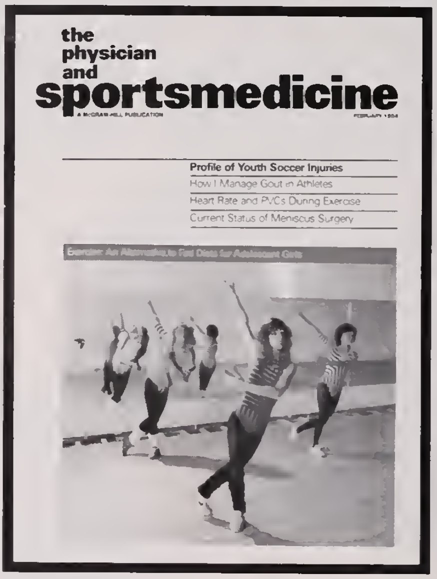

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ıre prescribing, see complete prescribing information in SK&F CO.
ature or *PDR*. The following is a brief summary.

VARNING

his drug is not indicated for initial therapy of edema or hypertension.
dema or hypertension requires therapy titrated to the individual. If this
ombination represents the dosage so determined, its use may be
ıore convenient in patient management. Treatment of hypertension
ıd edema is not static, but must be reevaluated as conditions in
ach patient warrant.

raindications: Concomitant use with other potassium-sparing agents
as spironolactone or amiloride. Further use in anuria, progressive
or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum
ssium. Hypersensitivity to either component or other sulfonamide-
ed drugs.

ings: Do not use potassium supplements, dietary or otherwise, unless
kalemia develops or dietary intake of potassium is markedly impaired.
oplementary potassium is needed, potassium tablets should not be
Hyperkalemia can occur, and has been associated with cardiac irregu-
s. It is more likely in the severely ill, with urine volume less than
iter/day, the elderly and diabetics with suspected or confirmed renal
ficiency. Periodically, serum K$^+$ levels should be determined. If hyper-
ıia develops, substitute a thiazide alone, restrict K$^+$ intake. **Asso-**
d widened QRS complex or arrhythmia requires prompt additional
py. Thiazides cross the placental barrier and appear in cord blood.
n pregnancy requires weighing anticipated benefits against possible
ds, including fetal or neonatal jaundice, thrombocytopenia, other
se reactions seen in adults. Thiazides appear and triamterene may
ır in breast milk. If their use is essential, the patient should stop
ıg. Adequate information on use in children is not available. Sensitivity
ons may occur in patients with or without a history of allergy or
hial asthma. Possible exacerbation or activation of systemic lupus
ematosus has been reported with thiazide diuretics.

utions: The bioavailability of the hydrochlorothiazide component of
ide' is about 50% of the bioavailability of the single entity Theoreti-
a patient transferred from the single entities of Dyrenium (triamterene,
CO.) and hydrochlorothiazide may show an increase in blood pressure
id retention. Similarly, it is also possible that the lesser hydro-
thiazide bioavailability could lead to increased serum potassium levels.
ver, extensive clinical experience with 'Dyazide' suggests that these
ions have not been commonly observed in clinical practice. Do
ic serum electrolyte determinations (particularly important in patients
ng excessively or receiving parenteral fluids, and during concurrent
vith amphotericin B or corticosteroids or corticotropin [ACTH]).
ic BUN and serum creatinine determinations should be made,
ially in the elderly, diabetics or those with suspected or confirmed
nsufficiency. Cumulative effects of the drug may develop in patients
mpaired renal function. Thiazides should be used with caution in
ts with impaired hepatic function. They can precipitate coma in
ts with severe liver disease. Observe regularly for possible blood
sias, liver damage, other idiosyncratic reactions. Blood dyscrasias
been reported in patients receiving triamterene, and leukopenia,
ocytopenia, agranulocytosis, and aplastic and hemolytic anemia
een reported with thiazides. Thiazides may cause manifestation of
diabetes mellitus. The effects of oral anticoagulants may be
sed when used concurrently with hydrochlorothiazide; dosage adjust-
may be necessary. Clinically insignificant reductions in arterial
siveness to norepinephrine have been reported. Thiazides have also
shown to increase the paralyzing effect of nondepolarizing muscle
its such as tubocurarine. Triamterene is a weak folic acid antagonist.
odic blood studies in cirrhotics with splenomegaly. Antihypertensive
may be enhanced in post-sympathectomy patients. Use cautiously
ical patients. Triamterene has been found in renal stones in asso-
with the other usual calculus components. Therefore, 'Dyazide'
be used with caution in patients with histories of stone formation.
occurrences of acute renal failure have been reported in patients on
e' when treated with indomethacin. Therefore, caution is advised in
stering nonsteroidal anti-inflammatory agents with 'Dyazide'. The
ıg may occur: transient elevated BUN or creatinine or both, hyper-
ia and glycosuria (diabetic insulin requirements may be altered),
icemia and gout, digitalis intoxication (in hypokalemia), decreasing
eserve with possible metabolic acidosis. 'Dyazide' interferes with
cent measurement of quinidine. Hypokalemia is uncommon with
e', but should it develop, corrective measures should be taken such
ıssium supplementation or increased dietary intake of potassium-
ds. Corrective measures should be instituted cautiously and serum
ium levels determined. Discontinue corrective measures and
e' should laboratory values reveal elevated serum potassium.
e deficit may occur as well as dilutional hyponatremia. Concurrent
h chlorpropamide may increase the risk of severe hyponatremia.
PBI levels may decrease without signs of thyroid disturbance. Cal-
cretion is decreased by thiazides. 'Dyazide' should be withdrawn
conducting tests for parathyroid function.

es may add to or potentiate the action of other antihypertensive

s reduce renal clearance of lithium and increase the risk of lithium

Reactions: Muscle cramps, weakness, dizziness, headache, dry
anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermat-
conditions; nausea and vomiting, diarrhea, constipation, other
testinal disturbances; postural hypotension (may be aggravated by
barbiturates, or narcotics). Necrotizing vasculitis, paresthesias,
pancreatitis, xanthopsia and respiratory distress including pneu-
and pulmonary edema, transient blurred vision, sialadenitis, and
ıave occurred with thiazides alone. Triamterene has been found in
ones in association with other usual calculus components. Rare
s of acute interstitial nephritis have been reported. Impotence has
orted in a few patients on 'Dyazide', although a causal relationship
been established.

l: 'Dyazide' is supplied as a red and white capsule, in bottles of
ıpsules; Single Unit Packages (unit-dose) of 100 (intended for
ınal use only); in Patient-Pak™ unit-of-use bottles of 100.
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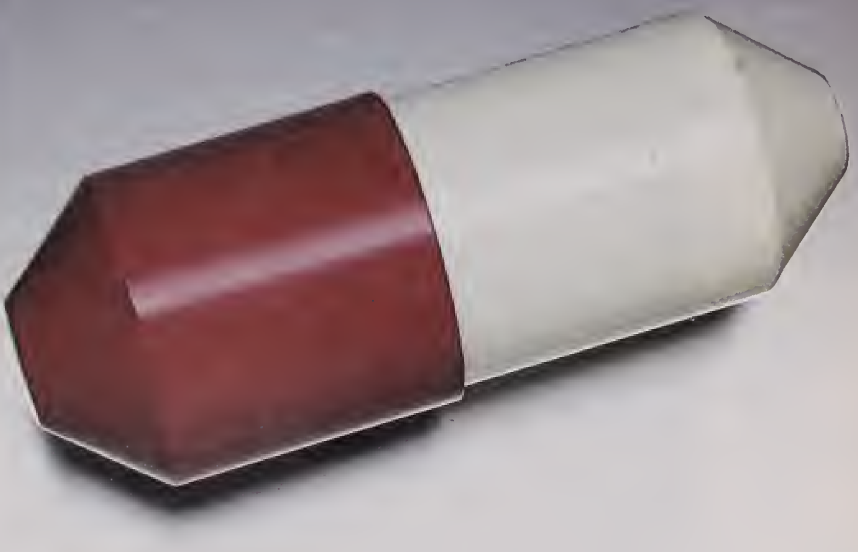

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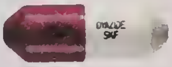

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Contraindications: Severe left ventricular dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (except in patients with a functioning artificial ventricular pacemaker), 2nd- or 3rd-degree AV block. **Warnings:** ISOPTIN should be avoided in patients with severe left ventricular dysfunction (e.g., ejection fraction < 30% or moderate to severe symptoms of cardiac failure) and in patients with any degree of ventricular dysfunction if they are receiving a beta blocker. (See *Precautions.*) Patients with milder ventricular dysfunction should, if possible, be controlled with optimum doses of digitalis and/or diuretics before ISOPTIN is used. (Note interactions with digoxin under *Precautions.*) ISOPTIN may occasionally produce hypotension (usually asymptomatic, orthostatic, mild and controlled by decrease in ISOPTIN dose). Elevations of transaminases with and without concomitant elevations in alkaline phosphatase and bilirubin have been reported. Such elevations may disappear even with continued treatment; however, four cases of hepatocellular injury by verapamil have been proven by rechallenge. Periodic monitoring of liver function is prudent during verapamil therapy. Patients with atrial flutter or fibrillation and an accessory AV pathway (e.g. W-P-W or L-G-L syndromes) may develop increased antegrade conduction across the aberrant pathway bypassing the AV node, producing a very rapid ventricular response after receiving ISOPTIN (or digitalis). Treatment is usually D.C.-cardioversion, which has been used safely and effectively after ISOPTIN. Because of verapamil's effect on AV conduction and the SA node, 1° AV block and transient bradycardia may occur. High grade block, however, has been infrequently observed. Marked 1° or progressive 2° or 3° AV block requires a dosage reduction or, rarely, discontinuation and institution of appropriate therapy depending upon the clinical situation. Patients with hypertrophic cardiomyopathy (IHSS) received verapamil in doses up to 720 mg/day. It must be appreciated that this group of patients had a serious disease with a high mortality rate and that most were refractory or intolerant to propranolol. A variety of serious adverse effects were seen in this group of patients including sinus bradycardia, 2° AV block, sinus arrest, pulmonary edema and/or severe hypotension. Most adverse effects responded well to dose reduction and only rarely was verapamil discontinued. **Precautions:** ISOPTIN should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of excessive pharmacologic effects. Studies in a small number of patients suggest that concomitant use of ISOPTIN and beta blockers may be beneficial in patients with chronic stable angina. Combined therapy can also have adverse effects on cardiac function. Therefore, until further studies are completed, ISOPTIN should be used alone, if possible. If combined therapy is used, close surveillance of vital signs and clinical status should be carried out. Combined therapy with ISOPTIN and propranolol should usually be avoided in patients with AV conduction abnormalities and/or depressed left ventricular function. Chronic ISOPTIN treatment increases serum digoxin levels by 50% to 70% during the first week of therapy, which can result in digitalis toxicity. The digoxin dose should be reduced when ISOPTIN is given, and the patients should be carefully monitored to avoid over- or under-digitalization. ISOPTIN may have an additive effect on lowering blood pressure in patients receiving oral antihypertensive agents. Disopyramide should not be given within 48 hours before or 24 hours after ISOPTIN administration. Until further data are obtained, combined ISOPTIN and quinidine therapy in patients with hypertrophic cardiomyopathy should probably be avoided, since significant hypotension may result. Clinical experience with the concomitant use of ISOPTIN and short- and long-acting nitrates suggest beneficial interaction without undesirable drug interactions. Adequate animal carcinogenicity studies have not been performed. One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. *Pregnancy Category C:* There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor and delivery only if clearly needed. It is not known whether verapamil is excreted in breast milk; therefore, nursing should be discontinued during ISOPTIN use. **Adverse Reactions:** Hypotension (2.9%), peripheral edema (1.7%), AV block: 3rd degree (0.8%), bradycardia: HR < 50/min (1.1%), CHF or pulmonary edema (0.9%), dizziness (3.6%), headache (1.8%), fatigue (1.1%), constipation (6.3%), nausea (1.6%), elevations of liver enzymes have been reported. (See *Warnings.*) The following reactions, reported in less than 0.5%, occurred under circumstances where a causal relationship is not certain: ecchymosis, bruising, gynecomastia, psychotic symptoms, confusion, paresthesia, insomnia, somnolence, equilibrium disorder, blurred vision, syncope, muscle cramp, shakiness, claudication, hair loss, macules, spotty menstruation. **How Supplied:** ISOPTIN (verapamil HCl) is supplied in round, scored, film-coated tablets containing either 80 mg or 120 mg of verapamil hydrochloride and embossed with "ISOPTIN 80" or "ISOPTIN 120" on one side and with "KNOLL" on the reverse side. Revised August, 1984. 2385

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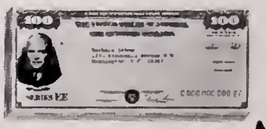

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Summary of Changes to the Minnesota Medical Practice Act

JACK BREVIU[*] and KATHLEEN A. MEYERLE[†]

During the 1985 legislative session, the Minnesota Legislature substantially amended the laws relating to the regulation of the practice of medicine in Minnesota by the Minnesota Board of Medical Examiners (Board). The new provisions became law on August 1, 1985. Listed below are the major features of the current requirements of the Board.

Mandatory Reporting Requirements

Under existing law, hospitals and other institutions, as well as malpractice insurance carriers, were required to report certain information to the Board concerning physicians. The mandatory reporting requirements are substantially expanded under the new provisions of law. Also, as noted below, failure to comply with the mandatory reporting provisions in the law is grounds for discipline of a physician's license. The following are mandatory reports:

1. Physicians and all other licensed health professionals are required to report personal knowledge of any conduct by a physician which the reporting physician reasonably believes may constitute a basis for disciplinary action by the Board against the physician. Reporting is not required from a physician who obtains his/her information in the course of a physician/patient relationship, if the patient is another physician and is limiting his/her practice to the extent required by the impairment.
2. Hospitals, clinics, prepaid health plans (HMOs), or other health care institutions must report any action taken to restrict a physician's privilege to treat patients or to remove a physician from the organization. If a physician voluntarily terminates a relationship with a clinic or reduces the scope of his/her practice in some fashion, no report is required.
3. State and local medical societies must report any disciplinary action taken against a physician as well as any complaint received on which there is no disciplinary action taken if the action would constitute grounds for disciplinary action by the Board.
4. Insurers who sell professional liability insurance are required to report quarterly information regarding physicians against whom professional liability settlements or awards have been made. In addition, the insurance company must report information which would tend to substantiate a charge that a physician has engaged in misconduct.
5. A physician is required to report himself or herself whenever the physician has been involved in activity which would require another physician or institution to file a report with the Board.
6. Reports which are mandated by the law must be submitted within 30 days of the reportable event. No civil liability or criminal prosecution may be brought for a report which is required to be submitted by the law. All reports are confidential and absolutely privileged communications.

Grounds for Disciplinary Action

The grounds for disciplinary action against a physician include the following:

1. Failure to demonstrate the qualifications for or satisfy the requirements for a license contained in the laws or rules of the Board.

*2. Obtaining a license by fraud or cheating or attempting to subvert the licensing examination process.

3. Conviction, during the previous 5 years, of a felony reasonably related to the practice of medicine or osteopathy.
4. Revocation or any other disciplinary action by another state or jurisdiction against a physician's medical license, including being refused a license by another state or failing to inform the Board that another state has taken action regarding the physician's license.
5. Placing false or misleading advertising,

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[*] Special Assistant Attorney General, Minnesota Attorney General's Office.

[†] Legal Counsel, Minnesota Medical Association.

claiming professional superiority or greater skill than another physician or promising positive cure of any disease.

6. Violating state or federal law relating to the practice of medicine or controlled substance use.
7. Engaging in conduct which is fradulent or demonstrates a careless disregard for the welfare of a patient, including medical practice which is professionally incompetent and creating an unnecessary danger to a patient.

*8. Failing to supervise a physician's assistant or supervise a physician under an agreement with the Board.

*9. Aiding and abetting the unlicensed practice of medicine.

10. Being judged by a court as mentally incompetent, chemically dependent or otherwise dangerous to the public.
11. Departing from the minimal standards of acceptable and prevailing medical practice (unprofessional conduct).
12. Lacking the reasonable skill to practice medicine because of illness, aging or use of chemical substances.
13. Revealing a privileged communication from a patient, except when required or permitted by law to do so.
14. Failure by a doctor of osteopathy to identify his/her professional degree in the use of his/her name.

*15. Improper management of medical records, including failure to maintain adequate records and failure to respond to a patient's request for his/her medical records.

16. Fee splitting.

*17. Engaging in abusive or fraudulent billing practices such as violations of federal Medicare and Medicaid laws.

18. Becoming addicted or habituated to a drug or intoxicant.

*19. Prescribing a drug for other than medically-accepted therapeutic purposes.

*20. Engaging in sexual conduct with a patient or in any verbal behavior which is seductive or sexually demeaning to a patient.

*21. Failure to inform the Board of improper conduct by other physicians or to cooperate with an investigation of the Board.

Physician Cooperation

Any physician who is the subject of an investigation by the Board is required to cooperate fully with the investigation. Failure to cooperate is a basis for disciplinary action against the physician's license to practice medicine.

Temporary Suspension

The Board is authorized to temporarily suspend, without a hearing, any physician from the practice of medicine under certain circumstances. The Board must first determine that the continued practice of medicine by the physician would create a risk of harm to the public. Once issuing a temporary suspension order, the Board is required to schedule a hearing within 30 days of the issuance of the order.

Licensure Standards

To be granted an initial license to practice medicine in Minnesota, an applicant must:

1. File a written application.
2. Provide evidence of graduation from or be enrolled in the final year of study at a medical or osteopathic school located in the United States, its territories or Canada which is approved by the Board.
3. Pass an examination given by the National Board of Medical Examiners or the Federation of State Medical Boards.
4. Present evidence of satisfactory completion of one year of graduate, clinical medical training in a program accredited by a Board-approved national accrediting organization or must obtain advance approval by the Board of a program not accredited by a national accrediting organization.
5. Make a personal presentation before a Board representative regarding his/her credentials.
6. Pay a non-refundable fee.
7. Refrain from having engaged in conduct warranting disciplinary action against a licensee.

The requirements for prior approval of unaccredited graduate training programs, personal appearance before the Board and compliance with the conduct guidelines are new.

Applicants for licensure by endorsement or reciprocity must comply with the above requirements. The Board may, however, require a higher

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* Indicates new disciplinary reasons added by the 1985 Legislature. The other reasons existed in various forms in the prior statute.

passing grade on the licensure exam than that approved by the original licensing board or require the applicant to be examined in subjects not covered previously in an examination.

The major change in licensure standards for graduates of foreign medical schools is the requirement of completion of two years of approved graduate training in the United States before being eligible for licensure. The Board may conduct site visits of foreign medical schools to determine if an applicant has demonstrated that the school is equivalent to accredited United States or Canadian schools. In addition to filing the written application, paying the application fee, making a personal appearance before a Board representative and demonstrating compliance with the misconduct guidelines, the applicant must pass an examination by the Federation of State Medical Boards, the Licensure Medical Council of Canada or establish reciprocity with another state.

Several miscellaneous changes were also made in the statute.

1. Beginning January 1, 1986, one public Board member must represent a mental health and consumer advocacy organization.
2. Complaints filed with the Board and all records relating to that complaint are closed to the public. If a disciplinary action is taken, then only the name and business address of the physician, the nature of the misconduct and the action taken by the Board are released to the public. The Board is required to annually publish this information.
3. The Board received expanded options in imposing discipline on a physician. Previously, the Board could only revoke, suspend or impose limitations or conditions on a physician's license to practice medicine. Now the Board may also impose a civil penalty not to exceed $10,000 for each violation of a Board rule or law, order a physician to provide unpaid professional service at a designated public hospital, clinic, or other health care institution, or censure or reprimand the licensed physician.

"Anyone may so arrange his affairs that
his taxes shall be so low as possible;
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Board Member of Medical Examiners Interviewed

The accompanying article in this issue details significant changes in the authority of the Board of Medical Examiners. The following hypothetical interview with a member of the Board of Medical Examiners discusses some reasons why the law was passed and attempts to address some of the questions which have been raised by these changes. These comments are based on informal discussions with Board members and the Board's counsel, but do not reflect the official position of the Board. Expression of these views is intended to begin a dialogue between physicians and the Board about implementation of the law.

The Editor: In 1977 and 1978, the Minnesota Medical Association proposed numerous changes to the Board of Medical Examiners and the State Legislature to improve the disciplinary actions and responsiveness of the Board. Little attention was given the report and few changes have been made in the Board's statute over the last few years. Now, in 1985, we see this broad-ranging Act which mandates reporting and creates additional grounds for discipline of a physician. Can you tell me why such a major piece of legislation needed to be adopted?

Board Response: You are right, that the Board and the Minnesota Medical Association have long sought changes in the Board's ability to manage its affairs, especially in the area of expanding the Board's staff and providing access to all the funds generated by licensing and examination fees. I think we should be pleased that the Board has finally received this authority to raise and use its funds. In 1984 and 1985, an investigative team from a local television station focused on the Board's disciplinary process, creating a heightened awareness by the Legislature and Board members about the Board's disciplinary function. Several bills were introduced by legislators to address perceived problems. At the same time, the Board decided to draft a revised statute addressing both current and past concerns.

The Editor: What were some of those concerns which the Board sought to address?

Board Response: The Board was most concerned about increasing and enhancing information exchange between physicians and the Board. We wanted to broaden our sources of information about physician misconduct and to add staff to be more responsive to the public. We were also concerned about the licensure process as it relates to our ability to evaluate foreign medical schools and their graduates. Finally, by making the grounds for misconduct more specific in the law, we felt it would be easier for physicians, patients and other health professionals to know what conduct is prohibited.

The Editor: The one feature of the new law most troubling to physicians is the mandatory reporting requirement. It seems overly broad and designed to create an incredible burden on physicians by exposing them to penalties for inadvertently failing to make a required report. What is your perspective on this?

Board Response: The requirements have been broadened. The Board asked for these changes because we have had numerous instances of the physician community failing to report very serious cases of misconduct. You must understand that the obligation of the Board is to guard the public safety directly and to serve the physician community by maintaining high disciplinary standards. Private intervention and peer review mechanisms are an important and integral part of physician discipline, but they may not be adequate. Our job at the Board is to be sure that these private mechanisms do not have loopholes through which incompetent or unqualified physicians can slip from community to community or practice to practice. The Board doesn't want to find out that peers have determined that a colleague is not qualified to practice, yet the physician has not been reported to the Board of Medical Examiners for restriction or revocation of the license. The Legislature holds us accountable.

The Editor: Which health professionals are required to report to the Board?

Board Response: Individual licensed health professionals, including physicians, nurses, pharmacists and others, are required to report instances of individual action which they believe might lead the Board to impose a disciplinary action on a physician. Institutions such as hospitals, nursing homes, and clinics are required to report formal actions following completion of the internal review and decision making protocols.

The Editor: What actually constitutes the standard for reporting under the new law?

Board Response: The law says that a physician is obligated to report "personal knowledge of any conduct which he or she reasonably believes constitutes grounds for disciplinary action." A physician must determine that the behavior is prohibited by the statute. This is a subjective determination and the discipline committee of the Board reviews each case individually to determine whether the conduct is below standard. We look at a number of things such as the degree of harm which the behavior might present to a patient; whether the conduct constitutes a pattern of behavior or is simply an isolated incident provoked by fatigue or some other unique factor; the nature of the conduct; and whether this is a question of ethical behavior, practice behavior or a violation of a state statute. You obviously have no way of knowing what the discipline committee will do in a particular case. I can only say that you must use your personal, professional judgment to reach a determination whether the statute has been violated or whether your patients or friends or a family member would wish to be treated by such a physician given the particular facts and circumstances of the case.

The Editor: What consequences will result to a physician or other health professional for a failure to report?

Board Response: Our actions are likely to be commensurate with the harm to the public by a failure to report. Our actions would range from doing nothing, to writing a letter informing the physician of his/her obligation, all the way up to revoking a license. Action could depend on the extent of knowledge of the non-reporting physician and whether a failure to report was intentional or inadvertent. The law is not intended to punish physicians for not reporting so much as to provide the Board with enough knowledge that we can begin our own investigations and properly protect the public. Other health professionals will face actions as determined by their individual licensing boards or agencies.

The Editor: Are there any protections for those persons mandated to report?

Board Response: Yes. The law provides that anyone reporting is immune from civil or criminal liability for making the report.

The Editor: Won't the Board be over-burdened by all these reports of very innocuous deviations from law?

Board Response: We don't think that will be the case. The Board has been given additional staff and funds to handle any increased work load. We feel the number of incompetent physicians is very small; however, we are concerned that physicians not providing appropriate care are brought to the attention of the Board.

The Editor: I am a member of a peer review committee at my hospital. Am I obligated to report under this statute?

Board Response: Your obligation as a member of a hospital peer review committee is to see that the hospital administration follows through on its obligation as an institution to make a report. While it may appear that you as a physician have an independent obligation to report the nature of the incidents in addition to the report of final action being made by the hospital, we are looking into whether another state statute protects the communications and working papers of a quality assurance or other peer review committee at a hospital. As long as a report is made by the hospital, we are not concerned about receiving additional reports.

The Editor: I receive a notice from my hospital that a member of the medical staff has lost his or her privileges. Am I obligated to make that report to the Board?

Board Response: No. Your information there is only the notice of final action. Unless the physician has personal knowledge of the misconduct and feels that it may be a violation of the law, then there is no obligation to report. The key to reporting in the new law is whether the physician had "personal" knowledge of the misconduct. This may involve a judgment call. If a nurse or patient brings something to the physician's attention, and a physician doesn't report, care should be taken to have the nurse or patient make the report. The message of the law is that physicians have a responsibility to serve the interest of the physician community as well as the people of Minnesota by disciplining incompetent peers. Reports need to be made so they can be evaluated. Simple reporting of an apparent violation does not always mean the practitioner will be disciplined. The Board examines each case carefully to determine appropriate action, if any.

The Editor: I am a medical director of a hospital or nursing home and, as part of my job, I often have consultations with staff members warning them that they have deviated from the facility guidelines or from some state law, but the conduct is not such that would cause the hospital to conduct a disciplinary action on its own. Do I have to report this conduct to the Board of Medical Examiners?

Board Response: That is a very difficult question. There is no privilege operating for you in your official capacity to refrain from making a report. I would say that if you have the requisite personal knowledge of the misbehavior, and you believe it is a violation of a law or needs investigation, then you are under an obligation to report.

The Editor: One of the new grounds for disciplinary action is prescribing a drug for an unapproved purpose. If I prescribe a drug for a purpose that is not approved by the Food and Drug Administration, am I required to report myself?

Board Response: No. The standard in the statute requires that the drug be prescribed for a "medically accepted" reason. This is different from the formal FDA regulatory approval process. What we intend to get at in this case are physicians who are using worthless products for worthless purposes or "experimenting" with a drug outside an accepted, controlled protocol.

The Editor: I decide to retire or limit my practice in some fashion. Am I required to report myself to the Board?

Board Response: No. There is a specific exclusion in the statute that if a physician voluntarily limits his or her practice in any fashion, this does not have to be reported to the Board. However, there is a caution that if the physician "voluntarily" takes this action after being threatened with formal discipline, then that is not truly a voluntary decision and then must be reported to the Board.

The Editor: A fellow physician comes to me and indicates that he is an alcoholic and I advise him to go into a chemical dependency treatment program. Do I have to report him to the Board?

Board Response: There is an exclusion in the law that if a physician/patient relationship exists and you counsel the fellow physician and provide a follow-up as you would normally do with a patient, then the communication is privileged and you are not required to report that to the Board. The Board is in the process of developing a rule to deal specifically with this and to provide guidance for the programs such as the MMA Impaired Physicians Program and Physicians Serving Physicians about this very sensitive area. It is not the Board's intent to interfere with bona fide intervention strategies, but we are concerned that we be informed if a physician fails to follow-through with the treatment recommendations. We expect that the physician patient is appropriately limiting his/her practice consistent with the condition being treated. If the misconduct continues to threaten patient safety, then the privilege for the treating physician no longer exists. One of our more significant concerns, as reflected by the volume of complaints coming to the Board, relates to the chemically dependent physician.

The Editor: Do you have any closing comments which you would like to make about the Act?

Board Response: I want to caution physicians that this is a new, comprehensive piece of legislation and it will take awhile for patterns to develop. We cannot and do not plan to anticipate issues which may come up, but rather will deal with them one by one, as they are raised in the context of complaints. I would urge the physician community to view this as a beneficial, rather than a punitive Act by the legislature or by the Board. Most importantly, let the Board know your concerns and problems with the new law. We need to be informed as we develop our policies. Please write to the Board at Room 352, 717 Delaware Street S.E., Minneapolis, Minnesota 55414, or to an individual Board member. (Editor's Note: Physician members of the Board of Medical Examiners are: Richard B. Tompkins, M.D., President, Rochester; Chester A. Anderson, M.D., Hutchinson; Jack Bert, M.D., St. Paul; Cassius M.C. Ellis, M.D., Minneapolis; William Jacott, M.D., Duluth; George B. Martin, M.D. Thief River Falls; Melvin E. Sigel, M.D., Minneapolis.)

Sixth Annual Medical Ski Conference

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Contact: Marge Adey, University of Nebraska Medical Center, Center for Continuing Education, 42nd and Dewey Avenue, Omaha, Nebraska 68105. Phone: (402) 559-4152.

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ferences:

Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy of diltiazem hydrochloride for the treatment of stable angina pectoris: Report of a cooperative clinical trial. Am J Cardiol 49:560-566, 1982.

Pool PE, Seagren SC, Bonanno JA, et al: The treatment of exercise-inducible chronic stable angina with diltiazem: Effect on treadmill exercise. Chest 78 (July suppl):234-238, 1980.

Reduces angina attack frequency*
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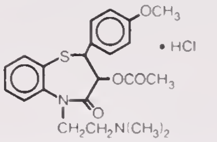
DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-Benzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+)-cis- The chemical structure is:



Diltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CARDIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CARDIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CARDIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CARDIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CARDIZEM.
2. Exertional Angina: CARDIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Diltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CARDIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Diltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CARDIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Diltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CARDIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CARDIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CARDIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Desacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CARDIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CARDIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CARDIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CARDIZEM is indicated in the management of chronic stable angina. CARDIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CARDIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CARDIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash asthenia (1.2%), AV block (1.1%). In addition, the following were reported infrequently (less than 1%) with the order of pr tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, br dia, palpitations, congestive heart syncope.
Nervous System:	Paresthesia, nervousness, somnc tremor, insomnia, hallucinations, and ar
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vo mild elevations of alkaline phosphatase SGPT, and LDH.
Dermatologic:	Pruritus, petechiae, urticaria, photosen
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episo vasospastic angina developed periods of transient asympt asystole approximately five hours after receiving a single dose of CARDIZEM.

The following postmarketing events have been reported quently in patients receiving CARDIZEM: erythema multiform kopenia; and extreme elevations of alkaline phosphatase, SGPT, LDH, and CPK. However, a definitive cause and effect be these events and CARDIZEM therapy is yet to be establishe

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been li Single oral doses of 300 mg of CARDIZEM have been well tol by healthy volunteers. In the event of overdosage or exagg response, appropriate supportive measures should be emplo addition to gastric lavage. The following measures may be consi

Bradycardia	Administer atropine (0.60 to 1.0 mg). I is no response to vagal blockade, adm isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed degree AV block should be treated wit diac pacing.
Cardiac Failure	Administer inotropic agents (isoprote dopamine, or dobutamine) and diuretics
Hypotension	Vasopressors (eg, dopamine or levart bitartrate).

Actual treatment and dosage should depend on the severity clinical situation and the judgment and experience of the tr physician.

The oral/LD_{50}'s in mice and rats range from 415 to 740 n and from 560 to 810 mg/kg, respectively. The intravenous LD these species were 60 and 38 mg/kg, respectively. The oral L dogs is considered to be in excess of 50 mg/kg, while lethalit seen in monkeys at 360 mg/kg. The toxic dose in man is not k but blood levels in excess of 800 ng/ml have not been asso with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic nary Artery Disease or Angina Pectoris at Rest Due to nary Artery Spasm. Dosage must be adjusted to each pat needs. Starting with 30 mg four times daily, before meals a bedtime, dosage should be increased gradually (given in di doses three or four times daily) at one- to two-day intervals optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage appears to be 180 to 240 mg/day. There are no available data co ing dosage requirements in patients with impaired renal or he function. If the drug must be used in such patients, titration shou carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort anginal attacks during CARDIZEM therapy.
2. **Prophylactic Nitrate Therapy**—CARDIZEM may be s coadministered with short- and long-acting nitrates, but have been no controlled studies to evaluate the antian effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (0088-1771-47) and in Unit Dose Identification Paks of 100 (0088-1771-49). Each green tablet is engraved with MARION on side and 1771 engraved on the other. CARDIZEM 60-mg sc tablets are supplied in bottles of 100 (NDC 0088-1772-47) and in Dose Identification Paks of 100 (NDC 0088-1772-49). Each ye tablet is engraved with MARION on one side and 1772 on the o

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For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

OCTOBER, 1985

9-12 **Principles of Colon & Rectal Surgery**; University of Minne-sota; Mayo Auditorium, U of M; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

9-12 **The 19th Annual Orthopaedic and Trauma Seminar:** Hen- epin County Medical Center; Pillsbury Auditorium, Hennepin County ledical Center. CONTACT: Ramon B. Gustilo, M.D.; 612/347-2812.

11-12 **Metabolic Exercise Testing;** University of Minnesota; Rad- sson South Hotel; CONTACT: University of MN, Office of CME, ox 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/ 73-8012.

12 **Symposium on Psychiatric Issues; Abbott-Northwestern Hospi-** al; Radisson South Hotel; CONTACT: Sally Ventres, Abbott-North- estern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874- 300.

16-18 **Internal Medicine Review**; University of Minnesota; Mayo uditorium, U of M; CONTACT: University of MN, Office of CME, ox 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/ 73-8012.

7-18 **Practical Toxicology: Health Concerns & Legal Issues in** **e Workplace;** St. Paul Ramsey Medical Center; Earle Brown ontinuing Education Center, St. Paul; CONTACT: Ruth K. lcIntyre, St. Paul-Ramsey Medical Center, 639 Jackson St., St. Paul, N 55101; 612/221-3980.

7-18 **Toxic Chemicals:** Managing Health, Regulatory and Legal sues in the Workplace; St. Paul-Ramsey Medical Center; Earle Brown ducation Center, St. Paul; CONTACT: Charles W. Drage, M.D., irector, CME, St. Paul-Ramsey Medical Center, 640 Jackson St., St. aul, Minnesota 55101: (612) 221-3992.

7-19 **11th Annual Meeting "Focus on the Adolescent;"** Minne- ta Perinatal Organization; Radisson Duluth Hotel, Duluth; CON- ACT: Pam Lindberg, MMA, 2221 University Avenue SE, Suite 400, inneapolis, Minnesota 55414; 612/378-1875

8-19 **Ophthalmology in Primary Care;** University of Minnesota, int Paul Hotel; CONTACT: University of MN, Office of CME, Box 3 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373- 12.

) **Insulin Therapy: An Update**; Mayo Clinic/Mayo Foundation; yo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. V., Rochester, MN 55905; 507/284-2085.

) **OB-GYN for Family Physicians**; Mayo Clinic/Mayo Founda- n; Mayo Clinic; CONTACT: William L. Nietz, Mayo Clinic, 200 st St. S.W., Rochester, MN 55905; 507/284-2085.

-23 **Clinical Reviews**; Mayo Clinic/Mayo Foundation; Mayo nic; CONTACT: William L. Nietz, Mayo Clinic, 200 First St. S.W., hester, MN 55905; 507/284-2085.

25 **Regional Conference on Angioplasty;** Abbott Northwestern Hospital; Minneapolis Plaza Hotel; CONTACT: Sarah Ventres, Education Dept., Abbott Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300.

25 **E. T. Bell Fall Pathology Symposium: Endocrine Pathology;** University of Minnesota; Radisson University Hotel; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

25 **Promoting Healthy Lifestyles for Pregnant Women;** St. Paul-Ramsey Medical Center, CME; Earle Brown Continuing Education Center, St. Paul Campus, University of Minnesota; CONTACT: Office of CME, 221-3992.

26 **Third Annual Clinical Review for Physicians** - 1985 - Thoracic Cardiovascular Surgery; Drs. Gannon, Lindberg, Satterfield & Anderson: Hyatt Regency, Minneapolis; CONTACT: Evan F. Lindberg, M.D., 2545 Chicago Avenue, Suite 6ll, Minneapolis, Minnesota 55404; 612/871-4771.

25-26 **Practical Gastroenterology;** Abbott-Northwestern Hospital, Minneapolis Plaza Hotel, CONTACT: Sally Ventres, Ed. Dept., Abbott-Northwestern Hospital, 800 E. 28th St., Minneapolis, MN 55407; 612/874-4300

26 **Fall Seminar;** Minnesota Society of Clinical Pathologists; Radisson University Hotel, Minneapolis; CONTACT: Pam Lindberg, MMA, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414; 612/378-1875.

30 **Options in Cardiovascular Medicine;** University of Minnesota; Radisson University Hotel, Minneapolis; CONTACT: University of MN, Office of CME, Box 293 Mayo, 420 Delaware St. S.E., Minneapolis, MN 55455; 612/373-8012.

31-November 1: **Latest Trends in Patient Management—Radiology and Urology**. St. Paul-Ramsey Medical Center. Holiday Inn-Town Square (formerly Radisson Plaza). CONTACT: Ruth McIntyre, St. Paul Ramsey Medical Center, 639 Jackson St., St. Paul, Minnesota 55101, 612-221-3980.

NOVEMBER, 1985

1-2 **Cardiology Update;** Abbott Northwestern Hospital; Marshall Inn, Marshall, Minnesota. CONTACT: Sarah Ventres, Education Department, Abbott Northwestern Hospital; 800 E. 28th Street, Minneapolis, Minnesota, 55407; (612) 874-4300.

2-3 **Cardiology Update;** Mayo Clinic/Mayo Foundation; Mayo Clinic, Rochester, Minnesota. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, SW, Rochester, Minnesota 55905; (507)284-2085.

4-6 **Clinical Reviews;** Mayo Clinic/Mayo Foundation; Mayo Clinic. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street SW, Rochester, Minnesota 55905; (507) 284-2085.

(November continued)

7-9 **Teaching Geratric Medicine;** University of Minnesota; Coffman Union, East Bank Campus, University of Minnesota. CONTACT: University of Minnesota, Office of CME, Box 293 Mayo, 420 Delaware Street SE, Minneapolis, Minnesota 55455; (612) 373-8012.

8-9 **Nutrition in the 1980s;** University of Minnesota; Radisson St. Paul. CONTACT: University of Minnesota, Office of CME, Box 293, Mayo, 420 Delaware Street SE, Minneapolis, Minnesota 55455; (612) 373-8012.

14-16 **CLINICAL STRATEGIES IN PRIMARY CARE MEDICINE:** St. Paul-Ramsey Medical Center, Holiday Inn-Town Square (formerly Radisson Plaza). CONTACT: Ruth McIntyre, St. Paul Ramsey Medical Center, 639 Jackson St., St. Paul, Minnesota, 55101, 612-221-3980.

15-16 **Sixth Annual Seminar for CME Directors;** Minnesota Medical Association; Spring Hill Center, Wayzata. CONTACT: Eugenia C. Kassar, Director of CME, Minnesota Medical Association, 2221 University Avenue SE, Suite 400, Minneapolis, Minnesota 55414. (612) 378-1875.

15-16 **Advanced Endourology:** Changing Options in the Management of Urinary Calculi; University of Minnesota; Radisson University Hotel; CONTACT: University of Minnesota, Office of CME, Box 293 Mayo, 420 Delaware Street SE, Minneapolis, Minnesota 55455; (612) 373-8012.

21-22 **Detection and Diagnosis of Substance Abuse in Patients;** St. Paul-Ramsey Medical Center; Wilder Forest, Stillwater. CONTACT: Office of CME, (612) 221-3992.

22-23 **Minnesota Chapter of American College of Physicians, Regional Meeting:** Minnesota Chapter, ACP; Hyatt Regency Hotel, Minneapolis. CONTACT: A. Schultz, M.D., Governor for Minnesota Chapter, Hennepin County Medical Center, Minneapolis, Minnesota 55415; (612) 347-2700.

22-23 **Laser Surgery with the Carbon Dioxide Laser;** University of Minnesota; Radisson University Hotel; CONTACT: Office of CME, University of Minnesota, 420 Delaware Street SE, Minneapolis, Minnesota 55455; (612) 373-8012.

DECEMBER, 1985

2-3 **Basic Life Support Course (CPR) Certification/Recertificatio** Methodist Hospital, St. Louis Park; CONTACT: Lisa Collins, 65 Excelsior Boulevard, St. Louis Park, Minnesota 55426 (612) 932-518

2-4 **Advanced Cardiac Life Support Course;** North Memori Medical Center; North Memorial, Robbinsdale, Minnesota; G. Patric Lilja, M.D., 3300 Oakdale North, Robbinsdale, Minnesota 55422 (61 520-5535.

4-7 **Coronary Heart Disease;** St. Paul-Ramsey Medical Cente Sheraton Midway Hotel; CONTACT; Ruth K. McIntyre, 630 Jackso Street, St. Paul, Minnesota 55101 (612) 221-3980.

5 **Neonatal Resuscitation Course;** North Memorial Medical Cente CME; North Memorial Medical Center, Robbinsdale, Minnesot CONTACT: Peter Marshall, M.D.; 3300 Oakdale North, Robbinsdal Minnesota 55422 (612) 520-5200.

6-7 **New Drugs and New Uses for Old Drugs;** Park Nicoll Medical Foundation; Radisson Inn Phymouth; CONTACT: Elain Anderson, 5000 West 39th Street, Minneapolis, Minnesota 55416 (61 927-3703.

JANUARY, 1986

17-18 **Cardiology Update;** Abbott Northwestern Hospital; Holi day Inn, Alexandria; Contact; Sarah Ventres, Education Department Abbott Northwestern Hospital; 800 East 28th Street, Minneapolis Minnesota 55407; (612) 874-4300.

21-31 **Current Problems in Cardiovascular Disease;** Mayo Clinic Maui Marriott Resort: CONTACT: William Nietz, Mayo Clinic, 20 First Street, SW, Rochester, Minnesota 55905. (507) 284-2085.

FEBRUARY, 1986

10-14 **Postgraduate Course in Pulmonary Allergy and Infectiou Disease;** Mayo Clinic/Mayo Foundation; Buena Vista Palace Hotel Florida; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street SW, Rochester, Minnesota 55905 (507) 284-2085.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Minnesota Physician's Directory

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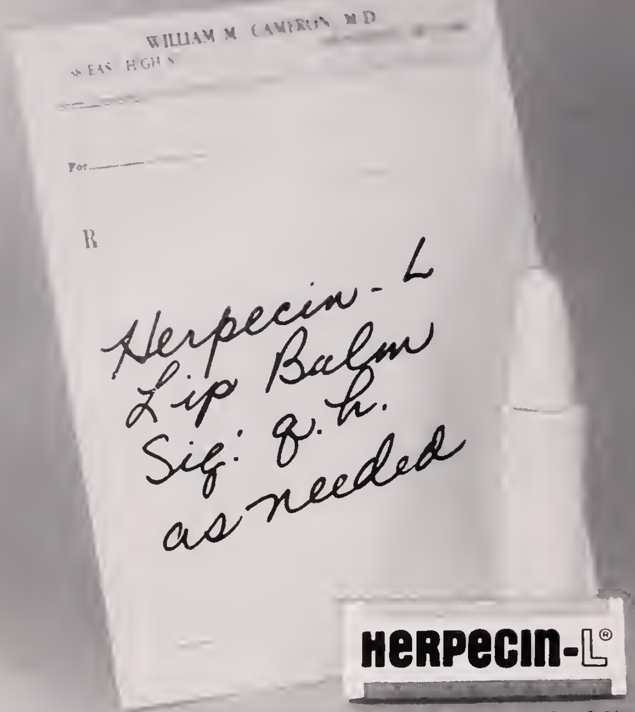

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Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

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OPHTHALMOLOGIST, NEUROLOGIST — Otolaryngologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

FAMILY PRACTICE — A progressive community located in scenic northern Wisconsin offers a variety of recreational and practice opportunities. A family practitioner is definitely needed, and we offer financial backing and guarantees. Our area provides an excellent education system for your family. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

WANTED: Family practitioner to join a 5 physician partnership in Litchfield, MN (a pleasant town of 6000 located 70 miles west of Minneapolis). If interested, please write or call collect at (612) 693-2804, Daniel A. Johnson, M.D., 35 E. 4th St., Litchfield, MN 55355.

FAMILY PRACTITIONER for Mankato Clinic satellite office. Excellent group practice opportunity in all-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R. F. Roskens, Administrator or B. C. McGregor, M.D. (507) 625-1811.

INTERNIST - East Range Clinics, Ltd. seeks an Internist with special interest in cardiology, pulmonary medicine or intensive care. Opportunity to enter established practice with progressive multispecialty group of 26 physicians including five Internists. Unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

MINNESOTA - Scenic Northern Minnesota town of 20,000 with a referral area of 35,000 seeks pediatrician to join multispecialty clinic. Challenging consultative and primary care pediatrics. Good benefits, early partnership, nationally recognized schools. Adjacent to national parks, ski areas, and lakes. Back up by board certified pediatrician/neonatologist available. Send curriculum vitae to John Brust, Mesaba Clinic, 1814 14th Avenue East, Hibbing, Minnesota 55746 or call Colleen Dinter, M.D., 218-262-4420 or 218-262-3441.

PEDIATRICS AND FAMILY PRACTICE positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

FAMILY PHYSICIAN - Join a progressive medical community in providing medical services to the Sebeka community in central Minnesota. Beautiful area, great community for raising family. Details, contact James G. Lawson, Administrator, Tri-County Hospital, Wadena, MN 56482, (218) 631-3510.

SUBURBAN F.P. GROUP - SHARE affiliate - seeks associate to service rapid practice growth - competitive salary and benefits - unique opportunity to establish your practice - contact Gloria M. Vierling, Sundance Medical Clinics, LTD., 323 Naumkeag St., P.O. Box 9, Shakopee, MN 55379, (612) 445-6440.

MINNEAPOLIS AND SUBURBAN practice of 10 family physicians seeks eleventh Board Certified or eligible family physician to join group or locum tenens. Major hospital affiliation, three practice sites. Direct inquiries to Dr. Youmans or Mr. Nickolay, 1206-42nd Avenue North, Minneapolis, MN 55412, (612) 522-6601.

TWELVE-PHYSICIAN multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

FAMILY PRACTICE - Northridge Family Medicine Clinic, P.A. is looking for a fourth BE/BC F.P. to practice in our new clinic facilities in Mankato. Contact Tony Giefer, M.D.; 1695 LorRay Drive, North Mankato, MN 56001 or call 507-345-5293.

GENERAL INTERNIST - Marshfield Clinic, one of the nation's largest multispecialty private groups, is seeking several Board certified/Board eligible General Internal Medicine specialists to join its expanding 16 member section. Internal Medicine Residency Program, University affiliation, Research Foundation, and large regional referral base contributes to a very stimulating environment. Unique big city medicine opportunity in a family oriented rural setting. Please send curriculum vitae to: John P. Folz, Assistant Director, Marshfield Clinic; 1000 North Oak Avenue, Marshfield, WI 54449 or call collect at (715) 387-5181.

INTERNAL MEDICINE - BC/BE Internist sought for four person Internal Medicine group based in the northwest Minneapolis suburbs of Crystal and Rogers. Close hospital association with North Memorial Medical Center. Please send C/V to: Bass Lake Physicians, P.A.; P.O. Box 29188; Minneapolis, Minnesota 55429.

EAST RANGE CLINICS, LTD. seeks physicians in the following specialties: obstetrics/gynecology, orthopedic surgery, ophthalmology, and internal medicine (with interest in cardiology, intensive care, or pulmonary medicine). Opportunity to enter established practice with progressive multispecialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, Minnesota 55792. (218) 741-0150.

S.E. MINNESOTA FAMILY PRACTICE opportunity: Solo fee for service. Family Practice is alive and well in S.E. Minnesota! Established Family Practice in town of 2,000. Nearby generalists and hospital. Willing to set up right person; OB optional. Weekend and night coverage. Call Jeff Robertson, Administrator, Zumbrota Community Hospital (507) 732-5131, or Robert Thompson, M.D. (507) 732-7331.

FAMILY PRACTICE PHYSICIAN wanted for rapidly growing multispecialty clinic. Outstanding opportunity, good salary and excellent benefits. Clinics located in northern suburbs with easy access to both Minneapolis and St. Paul; three satellite clinics located within a 15-mile radius of main clinic. Please direct inquiries to: Samuel C. Shield, (C1555) Minnesota Medical Services Corporation; 2221 University Avenue S.E.; Minneapolis, Minnesota 55414.

NORTHERN MINNESOTA INTERNIST in solo practice looking for partner. Prospect should be board eligible. Community offers all specialties and appeal of sophisticated resort area atmosphere. Current physician wishes to remain confidential. Please direct inquiries to: Samuel C. Shield (C1557); Minnesota Medical Services Corporation; 2221 University Avenue, S.E.; Minneapolis, Minnesota 55414.

FAMILY PRACTICE - Associate needed to join 4-man group, all ABFP, one member leaving soon due to health and family reasons. 65 miles North of Minneapolis, city of 2200. Trade area of 10,000. Excellent 40-bed hospital. Regular specialty consults at clinic and hospital, and all new diagnostic facilities available on site. Top school system and recreational activities. Contact Keith Clinic, P.A.; 160 SW Second Avenue; Milaca, Minnesota 56353, or call collect, (612) 983-6101.

WANTED: FAMILY PRACTITIONER, OB/GYN. Group practice. Central Minnesota. Starting salary $45,000. Write Minnesota Medicine (755), 2221 University Ave. S.E., #400, Minneapolis, MN 55414.

FAMILY PHYSICIAN BC/BEto join solo practitioner in Southwest Metro Area. Guaranteed salary plus fringe benefit package. Contact Samuel C. Shield (C1549), Minnesota Medical Service Corporation, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414.

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FAMILY PHYSICIAN - Four man Family Practice group needs to replace two leaving partners. Board eligible or certified desired. One year salary with partnership thereafter. Would also consider longterm locum tenens. Small town in Central Minnesota Lakes area. Unopposed Family Practice Clinic, 150 bed Regional Hospital at Brainerd, 100 bed Nursing Home, rotate calls. Call or write C. R. Pelzl, M.D., Pine River Medical Clinic, Pine River, MN 56474. (218) 587-4416.

PSYCHIATRIST - Immediate full-time and part-time positions with established multi-office MH and CD organization providing services to a large HMO population in the Twin Cities. Position involves direct clinical services, supervision, and consultation. Board certified or eligible. Attractive compensation and hours. Pleasant working conditions. Send resume to: Ms. M.L. Haider, Metropolitan Clinic of Counseling, Inc.; 1401 West 76th Street, Suite 400, Minneapolis, Minnesota 55423.

FAMILY PRACTITIONER needed to join large multispecialty group prepaid plan in the Minneapolis/St. Paul area. Very competitive compensation and benefits. Contact: MINNESOTA MEDICINE (761), 2221 University Avenue SE, Suite 400, Minneapolis, MN 5414.

TIRED OF ASSEMBLY LINE MEDICINE? Independent young family physician and general surgeon seeking family physician and/or general internist for attractive medium sized West Central Minnesota community. 3½ hours to downtown Minneapolis. Short drive to lake country. 95 bed JCAH hospital with adjoining office building and nursing home. Excellent schools, including junior college. Variety of financial arrangements available including salary guarantee. Contact: Medical Arts Physicians Association, 401 Oak Street, Breckenridge, MN 56520. Phone: (218)643-6400.

INTERNAL MEDICINE: The Fergus Falls Medical Group, P.A., Department of Internal Medicine seeks a fifth BE/BC general internist with interest inallergy, rheumatology, oncology, or cardiology. Our Group is located 175 miles NW of the Twin Cities and is the largest incorporated city between St. Cloud and Fargo, North Dakota. Our patients enjoy a full range of primary and secondary care services. Current clinic specialties include; Internal Medicine, General Surgery, Orthopaedics, Otolaryngology, Oral Surgery, Pediatrics, Ob/GYN, and Family Practice. Other specialties in our community include: Radiology, Pathology, Anesthesiology, Ophthalmology, and Urology. We Offer a stimulating professional atmosphere, an excellent financial opportunity, and a good working relationship with our adjacent 100 acute bed hospital located in a thriving community offering a high quality of life. If interested, please write or call collect at: (218)739-2221, Ext. 203, David T. Bjork, M.D., 615 South Mill Street, Fergus Falls, Minnesota 56537.

MEDICAL DOCTOR to have acute inpatient medicine and ambulatory care responsibilities. Prefer Board Eligible/Board Certified Internist with background in primary care internal medicine. Position offers: a competitive salary, a 40 hour week, malpractice coverage, 30 days paid vacation, and other excellent fringe benefits, in a JCAH accredited progressive medical center having a large patient population, adequate staffing, including Physician Assistants, and research opportunities. Financial assistance to defer cost of relocation. Equal opportunity Employer. Write or call Personnel Service, Veterans Administration Medical Center, St. Cloud, Minnesota 56301. (612) 252-1670.

PRIMARY CARE PHYSICIAN - opportunity for internist or family practitioner in north suburban area. Contact:. Dr. Duane Orn, Northport Medical Center; 5415 Brooklyn Boulevard, Brooklyn Center, Minnesota 55429. 612-533-8666.

FAMILY PRACTITIONER needed to join 2 FP's at the Ellsworth, Wisconsin office of a progressive eleven physician group. Liberal fringes and financial package. Forty miles from metropolitan Minneapolis/St. Paul. Contact R. M. Hammer, M.D., River Falls, WI 54022. Phone (715) 425-6701 or (612) 436-8809.

FAMILY PRACTICE OPPORTUNITIES — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

FAMILY PRACTITIONER - Large multispecialty clinic on the Florida west coast is seeking a BC/BE Family Physician to join several colleagues in a rapidly growing clinic. Excellent income potential with no investment. Send C.V. to Minnesota Medicine (759), 2221 University Avenue S.E., Minneapolis, MN 55414.

ARIZONA BASED PHYSICIAN RECRUITMENT firm has opportunities coast to coast. "Professionals working with Professionals." Over 13 years experience. Call (602) 795-7474; or send CV to: Mitchell & Associates, Inc., 2761 N. Country Club Rd., Suite 202, Tucson, AZ 85716.

NEED MONEY? Eight family physicians and two primary care specialists needed over next four years, in rural Minnesota. Will consider you now. Educational funds and early sign up bonuses. We are not an agency!! Send name and brief resume to: Minnesota Medicine (765), 2221 University Avenue SE., Suite 400, Minneapolis, MN 55414.

FAMILY PHYSICIAN needed to replace retiring partner in thriving 3-F.P. full service practice in Starbuck, Minnesota (home of the world's largest lefse) on the thirteenth largest lake in Minnesota. Modern eight-year-old hospital. Good hunting and fishing. Twenty miles from University campus. Call Dr. Bosl or Dr. Bucher at (612) 239-2231 for further information on this desirable practice opportunity.

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STAFF PHYSICIAN -Willmar State Hospital, A JCAH accredited 642-bed hospital serving the mentally retarded, mentally ill, and chemically dependent, has a salaried position for a staff physician. Willmar is a growing city of 20,000 in the Minnesota lake country 90 miles west of Minneapolis/St. Paul. Excellent benefits, stable work environment, competitive salary commensurate with qualifications. Please send indication of interest to Lester E. Johnson, CEO, Willmar State Hospital, Box 1128, Willmar, Minnesota, 56201. Equal opportunity/ affirmative action employer.

MINNESOTA'S FINEST OFFICE SPACE Top floor IDS Center, available for sublease, 770 square feet, includes 2 offices, secretarial area and library, 3300 square feet, includes 6 offices, conference room, and secretarial area. For more information, call Cindy, 333-8361.

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FAMILY PHYSICIAN - Two physicians to join existing two physician group one hour from Minneapolis/St. Paul. Generous first year salary guarantee with ownership possibility. Contact: W.S. Youngquist, 9500 Collegeview Road, #212, Minneapolis, Minnesota 55437.

Classified Advertisements

Gastroenterologist or Internist with subspecialty interest in gastroenterology (have all the equipment). Obstetrician/Gynecologist, General Surgeon, Internist, Family Practice in 18 physician multispecialty group located in ideal community of 26,000. Ninety minutes from Twin Cities, excellent schools, etc. The clinic is a modern, well equipped facility providing attractive guarantee and early partnership, plus other excellent benefits. Contact Richard W. Golly, Austin Medical Clinic, P.A., 101 N.W. 14th Street, Austin, MN 55912, (507) 433-7351.

Family Practitioner: BC/BE to join three board certified family physicians in a growing rural practice. Enjoy very competitive salary and benefits, excellent facilities and full privileges in adjacent city owned hospital. Contact Carl Melling, M.D., Melrose Clinic, P.A., 603 West Main Street, Melrose, MN 56352, (612) 256-4228 (office) or (612) 256-7227 (home).

Family practice — An area rich in recreational and cultural activities, excellent schools and churches needs your assistance. Superior, Wisconsin (service area of 45,000) is not overcrowded with physicians and is in need of two family practitioners with an existing clinic. Some Emergency Medicine training preferred. Full financial backing and guarantees. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Minnesota, Duluth: Emergency Medicine Physician wanted to fill vacancy in St. Luke's Hospital EMS Regional Trauma Center, with 19,000 annual ED volume. Fee-for-service corporation with negotiable first year salary and then full partnership. Prefer physician ABEM certified or eligible with interest in teaching in local ATLS, ACLS, and FP residency. Send CV to Physicians Emergency Service, Ltd.- 915 E. 1st St., Duluth, Minnesota, 55805. (218) 726-5212.

Psychiatrist to join progressive multi-specialty group of 61 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: John P. Merickel, M.D., 101 Willmar Avenue, Willmar, MN 56201.

Family Physician Or General Internist needed for an established primary care clinic of four Family Physicians and a General Surgeon. Guaranteed first year salary with benefit program. Located in a small town on the beautiful north shore of Lake Superior (service area population of 12,000) only 22 miles from Duluth which provides excellent referral and continuing education resources. Call collect (218) 834-2171 or write Steve Bjorum, Executive Director, Community Health Center, Inc., 4th Street at 11th Avenue, Two Harbors, MN 55616.

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Ob/gyn, and internal medicine Board Certified or Eligible, to join eight doctor clinic in Cloquet, Minnesota, a community of 12,000 (30,000 service area) located 20 minutes from Duluth — Superior. Clinic facility is located one block from modern, well equipped hospital. Cloquet enjoys a stable economy (forest products). Additionally, our community is noted for its excellent school system. First year salary guaranteed, paid malpractice, health and disability insurance, vacation and study time. Contact John Turonie, Administrator, Raiter Clinic, Ltd., 417 Skyline Boulevard, Cloquet, Mn. 55720. Telephone 218-879-1271.

Office space for rent: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

Practice opportunity. Assume Minneapolis-suburban very active practice. Family practice or internal medicine emphasis. Low investment. Write: Minnesota Medicine (748) 2221 University Ave. SE. #400, Minneapolis, 55414.

Pediatric Emergency Medicine. Four member group based at Minneapolis Children's Medical Center is seeking a BC/BE pediatrician with interest and/or experience in Pediatric Emergency Medicine. Responsibilities include Emergency Room, transport, hospital based acute medicine, resident and student teaching. Schedule flexible. Opportunities for career development. Call or send CV to: Kemp Crockett, M.D., Minneapolis Children's Medical Center, 2525 Chicago Avenue South, Minneapolis, Minnesota 55404. 612/874-6843.

BC/BE Pediatrician for staff position in Minneapolis Children's Medical Center's ambulatory center. Patient population includes mix of socioeconomic and cultural groups with significant percentage of high risk families. Position includes resident teaching, clinical research, an innovative multi-disciplinary approach to outpatient care and significant inpatient involvement. Contact or send CV to Mitchell J. Einzig, M.D., Medical Director, Minneapolis Children's Medical Center, 2525 Chicago Avenue, Minneapolis, Minnesota 55404. (612)874-6803.

Physicians. Over 200 positions nationwide. All specialties. BE/BC. 15 years experience. Contact Earl Czech, North Central Staff Services, Inc., 4175 Lovell Road, Suite 108, Circle Pines, Minnesota 55014. Phone answered day and night. (612) 786-1929.

26 Bed Full Service Hospital in North Central Minnesota seeks two Board Certified Family Practitioners for permanent placement in service area of 7100. Income guarantee for first year and previous five year's records available. Equipped clinic/office three blocks from hospital offered at reduced rate. Annual bonus for tenure and fringes negotiable. Prime recreational area. Contact William Koepp, Lifecrest Medical Corporation at (612) 292-0402.

Family Practice Physician - Board eligible/certified physician to join supportive primary care staff to provide quality care in a successful and innovative HMO. Located in St. Cloud, Minnesota (approx. 50,000 population, 3 colleges, full recreational activities, 70 miles from Twin Cities). New clinic facility. Full range of fringe benefits (competitive salary, liberal vacation, 2 weeks educational leave, retirement fund, etc.). Full range of FP responsibilities including OB. Contact Dr. Patrick Lalley, Central Minnesota Group Health Plan, 1245 15th Street North, St. Cloud, Minnesota 56301. (612) 253-5220.

Wanted Family Practice, Orthopedic Surgeon, Vascular, General Surgeon, Internist, Cardiologist, OB, and GYN for SW Minnesota community. Have the largest hospital in the surrounding area. Competitive salaries. Please write or call collect at (507) 537-1435, Donald F. Peschong, 210 West Redwood, Marshall, Minneaota 56258.

Neurologist. To join four other neurologists in growing 260-physician multispecialty clinic in western suburbs of Minneapolis. EEG, EMG and evoked potential studies in clinic. Ideal geographic location, academic interest encouraged. Subspecialty internist desired. Daniel Freking, M.D., Park Nicollet Medical Center, Meadowbrook Clinic, 6490 Excelsior Blvd., St. Louis Park, Minnesota 55426. (612) 927-3200.

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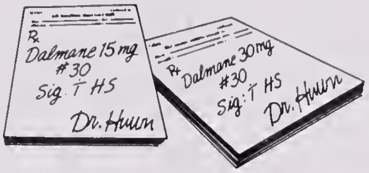

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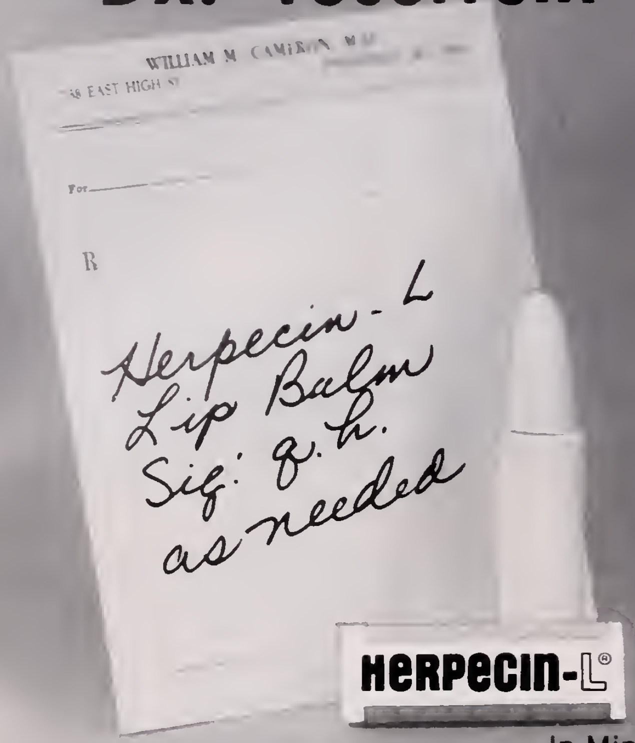

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President's Letter

"Those who cannot remember the past are condemned to repeat it"

-Santayana

Where will medicine be in 25 years? What place will physicians hold? What type of patient care will be expected of us? If we look *back* 25 years, we will see that there has been a dramatic change in medical knowlege and technology, yet the issues we face in patient care are much the same.

"A revolution is going on which, within a decade, could alter your whole life, determine how you practice medicine and dictate the way you care for your patients. The crisis will come, perhaps, within a matter of months. The decision to be made is this: who will take the leadership role in solving medical and health problems?

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Had physicians been quicker to respond and taken greater control at that time, might we have had less chaos in today's medical delivery system? If we respond effectively to today's challenges, will the medical profession be on firmer footing in 2010?

The 1960 editorial discussed a survey which indicated that physicians, individually and collectively:

1. Failed to communicate effectively regarding fees and medical costs.

Today's survey respondents believe physicians do little to control costs, 48 percent of the public are reluctant to ask the cost of a medical procedure and 90 percent believe costs could be reduced if physicians were dedicated to that objective. In addition, 62 percent of the public believe the cost of medical care is "much too high."

2. Failed to communicate effectively on a personal level.

Market surveys show that patients believe physicians spend too little time with patients and make patients wait too long.

Recently, an aide to U.S. Senator David Durenberger told MMA leadership that one of the difficulties in passing doctor-beneficial bills in Congress is that Congressmen almost universally view all physicians as being "rich and aloof."

3. Are not interested in the problems of the indigent, aged, and the economically stricken.

We've made some progress on this one. Today, 54 percent believe the medical care for the poor and disadvantaged is excellent, but too costly; 64 percent believe the elderly receive good or excellent care in our present system.

Medicine was also chastised in 1960 for not informing the public of plans to train more physicians, thereby offering the public better access to quality medical care. There was some public concern that the medical profession was purposely restricting the number of physicians and hospital beds. Today, we find ourselves trying to control the physician and hospital bed supply as a result of the over aggressive response to the "need" of 25 years ago.

Is there an area where our over aggressiveness today may bode ill for the future? It is difficult to predict, yet important to attempt to do so.

It is both interesting and educational to look back 25 years and evaluate what progress medicine has made and how the changes in our system might have been better directed. The kaleidoscopic changes in medicine continue. Certainly governmental influences and control have drastically increased. Society struggles with the financial demands of payment systems plus the oversupply of physicians and hospital beds. The public still, as recent polls indicate, sees physicians as too money hungry and less than appropriately concerned about their patients.

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Communications with our patients continue to be one of medicine's greatest problems.

Peggy Craig

M. Elizabeth Craig, M.D.
President
Minnesota Medical Association

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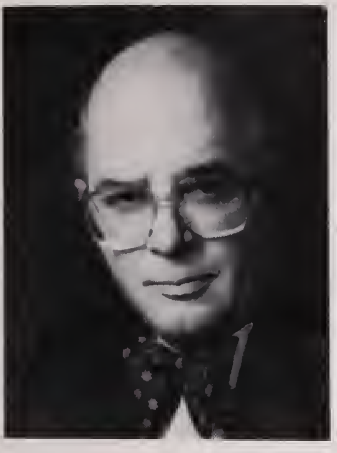
Cover Slides for Minnesota

We are looking for early spring and early summer scenes for covers for Minnesota Medicine. We would like vertical slides which work best for our format, but we will accept horizontal slides.

Bruce Nydahl, M.D.
Cover Editor

Rheumatology Symposium—Notice of Cancellation

We regret to announce the cancellation of the Rheumatology Symposium which was scheduled for November 29-December 8, 1985 in London and Bath, England. This cancellation is due to lack of registrations. Consideration is being given to rescheduling the program for the Spring or Summer of 1986. Rescheduling will only occur if there is sufficient interest. The Program Planning Committee would like to know why this program did not appeal to more physicians. If you would like to see the program rescheduled or if you have any thoughts or comments regarding the need to cancel the program, please address your correspondence to: Conrad Butwinick, M.D. at the MMA address. We would appreciate receiving your response as soon as possible so that we may proceed with efforts to reschedule. Thank you.



Editor's Notebook

The Corporate Transformation of Medicine in Minnesota: Trouble on the Iron Range

Fourteenth in a Series

"What is clear is that rural health care is changing—and is on the verge of greater change. Twin Cities health-maintenance organizations, or HMOs, now serve 40 percent of the urban population and are expanding in rural areas. One Twin Cities hospital advertises that its 'loving arms' extend to Bismarck, S.D. Rural clinics and hospitals are affiliated with or managed by larger groups. Senator Dave Durenberger has expressed concerns about inadequate discussion of rural health care and about signs of unhealthy competition."

Leonard Inskip, "An Attempt to Take the Pulse of Minnesota's Rural Health Care," *Minneapolis Star and Tribune*, September, 1985.

"Residents in all but 11 of Minnesota's 87 counties will now be able to receive their health care through a health maintenance organization (HMO) according to the State Health Department.

"Over 95 percent of all Minnesotans now live in areas served by HMOs, Department authorities said. The Department recently issued a license to one new HMO, and allowed three existing HMOs to expand into new areas of the state. HMO services had previously been available only in the Twin City areas and parts of central and northeast Minnesota."

News Release from the Minnesota Department of Health, For Immediate Use, September 10, 1985.

"Primary Care Network (PCN), the newest and geographically largest health maintenance organization (HMO) in Minnesota, has just received its Certificate of Authority from the State Department of Health. PCN has been granted a license to operate in sixty-eight of the eighty-seven counties making it the most widely licensed HMO in Minnesota. The Certificate of Authority followed closure of the sale of Primary Care Network Management Company stock to Whitehead Associates of Greenwich, Connecticut and the University of Minnesota Hospitals and Clinics (UMHC)."

News Release, Primary Care Network, September 11, 1985.

Hibbing - Well, it has been a quiet week at Central Mesabi Medical Center, Hibbing's only hospital. With the hospital census running 30 to 50% in this 175 bed institution, most weeks are quiet. It is so quiet that hospital officials and physicians claim that you hear the distant sounds of engines starting as Twin Cities' HMOs and hospitals rev up their ambulances, helicopters, and small planes for the trip north to pick up patients and referrals.

But right now, hospital officials are concerned more about empty beds. Where have all the hospital patients gone? Take your pick: (a) depressed economic conditions, (b) HMO market penetration, (c) prospective payment for Medicare patients, (d) patient raids by Twin Cities' hospitals, (e) Professional Review Organizations, (f) conservative practice styles of Minnesota physicians, (g) good health of Minnesotans, who lead the Continental United States in longevity, or (h) all of the above. I would choose (h), but I wouldn't argue about (a) or (c).

A Day in Hibbing

I doubt if I will find the right answer to this multiple choice question from my one day here in Hibbing, a town perched on the edge of the Hull-Rust Mine, the largest open-pit mine in the world. Some people who have never visited Hibbing think of it as the pits, but I find it quite pleasant!

It is 4 p.m. The September days are growing shorter, and the late afternoon sun slants through the window. In four hours, I speak before the Range Medical Society at Valentini's Restaurant in Chisholm. I'll be talking about what Twin Cities' HMOs and hospitals are doing to outstate Minnesota.

Thinking Over What to Say

I am thinking over what to say this evening. Thoughts about my remarks have preoccupied me since this morning when our 15 passenger Mesaba Airlines Beechcraft jet swept in over the tundra to set down at the airport. As I ponder, I sit in the library of the Central Mesabi Medical Center, built five years ago. Today patients occupy 35 percent of its beds.

The Smaller the Hospital, the Less Its Use

The Central Mesabi Medical Center, like other Minnesota hospitals in smaller towns, suffers from dropping use and shortening stays. But Central Mesabi Medical Center is lucky. It is big for a rural hospital. A strong link exists between hospital use and hospital size - the smaller the hospital, the greater the percent drop in admissions and the shorter length of stay.

This simple fact makes things tough for most hospital administrators in Minnesota. Why? Because 62 percent, or 119, of Minnesota's 187 hospitals have less than 100 beds. Indeed, 50 percent have less than 50 beds. Only 27 of Minnesota's hospitals have 200 beds or more. Minnesota has more than its share of small hospitals.

Other Depressing Factors

If, to the presence of these small hospitals, you pile on such factors as HMOs moving into the winterlands, Twin Cities' hospitals luring away rural patients, and the tendency of conservative Minnesota physicians to keep down admissions and length of stay, you can account for financial losses among rural hospitals. Given these factors, it's a small wonder Minnesota Hospital use lags behind the Midwest and U.S. (Table 1), and many small Minnesota Hospitals are in trouble.

	National	*Midwest Region*	*Minnesota*
Admissions			
Total	- 2.7%	- 9.4%	- 9.4%
Over 65	- 1.6	- 8.2	-14.3
Under 65	- 3.2	-10.0	- 6.8
Patient Days			
Total	- 8.9	-17.3	-18.3
Over 65	- 9.5	-19.9	-26.0
Under 65	- 8.4	-15.2	-13.3
Length of Stay (in days)			
Total	6.5	6.4	5.9
Over 65	8.7	7.7	7.2
Under 65	5.5	5.7	5.4

Table 1 - Statistics for hospitals for October 1984 compared to year before. Data from the National Hospital Panel Survey Report, Hospital Data Center, American Hospital Association.[1]

A Closer Look

If you look closer at bed use by hospital size, you can see why rural hospital beds are empty (Table 2).

Number of Hospital Beds	6-24	25-49	50-99	100-199	200-299	300-399	400-499	+500
Admissions								
Total	-18.5%	-12.5%	- 9.9%	-13.4%	- 7.3%	-11.0%	- 5.9%	- 2.4%
Over 65	-22.7	-12.1	-16.8	-16.4	-20.6	- 0.2	-13.8	- 8.3
Less 65	-14.4	-12.8	- 5.6	-12.0	- 4.1	-14.0	- 3.5	- 0.1
Patient Days								
Total	-30.8	-23.1	-18.0	-22.9	-18.3	- 7.6	-19.1	-10.5
Over 65	-38.8	-27.7	-27.7	-28.9	-31.3	-18.0	-27.3	-15.7
Less 65	-15.3	-16.4	- 8.4	-18.4	-13.5	- 3.4	-15.3	- 7.7
Length of Stay (in days)								
Total	4.3	4.4	4.7	5.4	5.1	8.3	5.4	7.5
Over 65	5.4	5.8	5.9	6.8	7.0	8.5	7.1	9.2
Less 65	3.4	3.4	4.0	4.8	4.8	8.2	4.9	6.9
Number of Hospitals in Minnesota	29	65	25	25	24	8	3	9

Table 2 - Bed Use in Minnesota Hospitals. Data from Health Information Resources of Minnesota.[1]

Rural Physician Stress

From these data, you can appreciate why rural physicians are under economic and personal stress. After all, doctors derive much of their income from hospital visits and procedures. Besides, even the thought of closing a hospital creates anxiety by threatening to spell the end of small town culture. As Robert Thompson, Vice-President of Planning for LifeSpan, Inc., commented:

> "When small rural hospitals close, access to care is reduced; jobs are permanently lost; and physicians relocate in larger communities. Eventually the loss of basic services (the school, bank, and hospital) spells the end of a small town's economic and cultural significance."[2]

Decline of Labor Force

The labor force on the Iron Range has dropped to its lowest point in ten years. From 1980 to 1985, about 15,000 jobs in seven county Arrowhead region have been lost. Workers have either left or gone on the public dole.

This economic depression has not necessarily devastated hospitals. Here at Central Mesabi Medical Center, the percent of both Medicare and Medicaid patients has gone up. This institution, with a current annual budget of $13.5 million may make a profit of $250,000 this year.

Nonetheless, the crisis has gone beyond the mines to other sections of the economy of small towns. Merchants are hurting; bankers are pinched; teachers are threatened; and realtors cannot sell houses. Yet, in some hospitals, such as Central Mesabi Medical Center, these adversities have brought people closer together. The morale at the medical center, I am told, is at "an all-time high," as hospital employees innovate to "resize" the hospital to achieve efficiencies.

Trends Effecting Doctors

Other trends fuel rural physicians' concerns for the future. More family practitioners and specialists are diffusing into the countryside from cities; the number of rural elderly are growing yet payment for their care is increasingly restricted; and multimedia health care marketing for Twin Cities HMOs and hospitals is pulling outstate people into the Cities. To this picture, paint in the specter of unemployment in the smoke stack industries of Northern Minnesota and the farming crisis of the rest of the state, and you realize hard time have come to the Minnesota heartland.

Today, at the hospital, I visited four doctors - a surgeon, a radiologist, a pathologist, and a general practitioner. At noon, I listened to a pediatrician from Children's Hospital in Minneapolis. He spoke about monitoring infants who have a high risk of dying from Sudden Infant Death Syndrome.

Yellow Journalism

After the pediatrician's talk, I returned to the library and turned to the physicians' section in the yellow pages. From this exercise in yellow journalism and from previous talks with physicians, I learned Virginia (pop. about 12,000) has two clinics - the East Range Clinic, with 30 doctors and a SHARE affiliation, and the Lenont-Peterson Clinic, with 10 doctors and a MORE affiliation. Hibbing (pop. 21,000) has two clinics, the Adams Clinic, 25 percent of whose patients come from MORE, and the "fiercely independent" Mesaba Clinic, with no HMO affiliation. Grand Rapids (pop. 9,000) has three clinics - North Star Clinic with four doctors, Grand Rapids Clinic with eight doctors, and Itasca Clinic with nine doctors - with no HMO affiliation. Each clinic, however, will participate in the prepaid Medicaid Demonstration Project in Itasca County. Sometimes when you let your fingers do the walking, you learn a lot about to whom you are talking.

Range Talk

What follows is a shortened version of the talk I gave before the Range Medical Society:

> Chisholm, Minnesota - Thank you for inviting me to speak. I am the first of a Twin Cities human wave. You'll soon be seeing more people from the Twin Cities - HMO advance people, private-surgical-and medical specialists, University Medical School faculty members, and hospital representatives - all seeking greater market share and more referrals in exchange for their expertise, knowledge, and resources.

The Invitation

In his letter inviting me to talk, Dr. Ben Owens, who as a bachelor doctor personifies that rugged independence of Iron Rangers, wrote:

> "We want you to talk, of course, on the social economic changes in medicine and how they would apply to our area and state, in general, and on some of the background of this for the next 5-10-15 years. I think you will know better than we what would be best for us to hear in this regard from your vast experience speaking throughout the country and, apparently, the world!"

Acting on Instructions

So, acting on Dr. Owen's instructions, I shall discuss, in a worldly fashion, how the current health care trends are likely to affect you. How health care changes influence any community depend on its people and their culture. As a downstate city slicker, who mostly travels south rather than north to play and escape, I possess only reading knowledge of the Iron Range.

What Reading Has Taught Me

That reading has taught me you actually have three Iron Ranges - the Vermillion Range that includes the Ely and Tower-Soudan region; the Mesabi Range that runs from Aurora to Coleraine and encompasses Hibbing and Virginia; and the Cuyuna Range that contains the Crosby-Ironton region northeast of Brainard.

I have not visited any of these Iron Ranges. They, therefore, remain a mystery to me. For me then, this trip is a learning experience. In talking to you, I feel a bit like Rudyard Kipling's character in his poem, "The Explorer". Kipling's man said:

"Something hidden. Go and find it. Go and Look
  behind the Ranges
Something lost behind the Ranges. Lost and
  waiting for you. Go!

Preconceptions

Well, I have gone and come. I come with preconceptions about Iron Rangers. For example, from Don Fraser's losing Senate 1978 campaign against Robert Short, I know you can't be told how to think. From reading and listening to your native sons - Jeno Paulucci, Miles Lord, Jim Klobuchar, Steve Cannon, and Rudy Perpich - I know you are mavericks, fiesty, independent, and strong-willed.

I know you're for the underdog, but you're not necessarily liberal. Yet, after listening to Miles Lord, who sits in judgment on mankind, I know you believe in "massaging the goodness glands, and not the greedy glands." I know you welcome ethnic diversity. Many of you still speak Slovenian, Croatian, Italian, and Finnish. If you will permit me to pin a few metals on you, I know you Iron Rangers have iron in your will, steel in your spine, nails in your hands, and gold in your hearts.

And finally, I know doctoring on the Range can be tough, especially if you practice in a remote location. Or, at least, that's what Dr. Hilfiker, formerly a family practitioner in Grand Marais, led me to believe when he wrote this passage in his book, Healing The Wounds:

> "Every physician discovers that doctoring offers many opportunities to retreat from the intensity of the medical experience. Exaggerating the required clinical detachment, busying oneself with efficiency and productivity, hiding behind the professional's prestige and authority, entering into subtle competition with other physicians to prove one's competence, or earning as much money as possible all provide avenues for separating

> oneself from the overwhelming nature of each day. But this is not the only pressure . . . The necessity to be almost continuously available may be the worse."[3]

As Iron Rangers, most of you know you have to be tough and independent to survive. But is your toughness and the independence and your geographic insolation going to protect you completely from Twin Cities' market forces?

I doubt it. Oh, certain strategic steps will help insulate you. You can form your own HMO, as you have done with MORE. You can strike up alliances with SHARE, Group Health, or MedCenter. You can heed the advice of officials of Duluth's three hospitals. They are saying: "Refer to us." Or, "We urge people to stay in their communities for primary care."[3] Or, you can listen to the Minnesota Medical Association and Minnesota Hospital Association, who have joined together to sponsor MeSH and Joint Venture meetings among physicians, trustees, and Chief Executive officers in six outstate cities (Fergus Falls, Thief River Falls, Hibbing, St. Cloud, Marshall, and Rochester).

But none of these steps will completely blunt Twin Cities' market forces. Let's look at what's happening.

- In Virginia, the East Range Clinic has a SHARE affiliation, and the Lenont-Peterson Clinic was recently bought out by the MORE HMO.

- In Hibbing, the Adams Clinic handles about 25 percent of the MORE HMO patients.

- In Grand Rapids, the North Star, Grand Rapids, and Itasca Clinics will be part of the Medicaid demonstration project. If you give the matter any thought at all, you will realize HMOs have now penetrated all major markets —private employees, state employees, government employees, private individuals, Medicare patients, and now Medicaid recipients.

- Twin Cities hospitals now dispatch helicopters to the Iron Range and Duluth (one Duluth hospital administration refers to these helicopters as "pirate ships").[4]

- Twin Cities' specialists are now being regularly flown by chartered small planes to consult with clinics and hospitals. Indeed, these specialists are even listed in your yellow pages as a formal part of your staff.

- The University of Minnesota Medical Center now has 25 targeted locations outstate in its outreach program and will send specialists to those centers. In their Rural Physician Placement program, the University will be installing computer terminals for transferring data on patients referred to the University and for medical educational programs. There is a good reason for this. The University has found its referral ratio from RAPP placement areas are 4/1 over those communities where none of their graduates have served.

- The University Hospital, its medical school faculty, and Whitehead Associates have bought Primary Care Network and, in a nonexclusive agreement, will seek to assure a predictable stream of future referrals to the University from outstate sites.

- The Minnesota Department of Health now boasts that 76 of 87 Minnesota counties, or 95 percent of Minnesota, have access to HMOs. The Department has authorized Primary Care Network to provide service in 68 counties and also approved expansion of MedCenters Health Plan, HMO Minnesota, and MORE Inc. PCN will provide services for all or part of 39 counties for the first time.

- Blue Cross - Blue Shield is vigorously marketing its AWARE GOLD program all over the state. It now has 100,000 members and hopes to increase or maintain its market share both in the metropolitan and nonmetropolitan areas. With AWARE GOLD, the Blues hoped to launch a pre-emption strike to protect its rural turf, or in the case of the Iron Range, its tundra.

Goings On

What is going on? Why the frenzied activity? What are HMOs up to?

- In the first stage of their development, HMOs fed on indemnity-type carriers, who could not offer the same comprehensive care. Growth was rapid in that phase, and profit margins were high.

- In the second phase, which occurred at about 30 percent market penetration, HMOs' margins shrank because marketing became more expensive and competition kept rates lower.

  The Twin Cities passed 30 percent market penetration in late 1983 or early 1984. Market penetration has since climbed past 40 percent, possibly to 45 percent (I cannot get the precise figures from Interstudy).

- In any event, as HMOs enter this second stage, all sorts of things begin to happen.

  1. The Fee-for-Service competition and indemnity insurers begin to act like HMOs and PPOs. The AWARE GOLD plan is essentially a giant PPO.

  2. The HMOs begin to pass their increasing costs to the hospitals. They ask for discounts for hospital care, discounts for volume guarantees, risk sharing by hospitals and a share in hospital governing. This becomes possible because the plans have more leverage because they admit more patients to hospitals. In 1982, HMOs' percent of hospital days was 10.0%; in 1983, 11.6%; and in 1984, 15.7%. This occurs in spite of HMO inpatient days dropping from 448/1,000 (1982) to 417/1000 (1983), to 385/1000 (1984).

  3. HMOs, heretofore mostly an urban phenomenon, began to expand into rural, non-metropolitan towns to sustain their growth. This is clearly what MedCenter, HMO Minnesota, PHP-SHARE, and even Group Health are doing. The speed and vigor with which they do this depends on available capital, financial strength, capacity for growth, and imagination of marketing. Margins for Twin Cities HMOs in 1984 fell from 5.2% to 4.0% for the previous year.

Compound annual membership growth from 1982-84 for Twin Cities and their profit margins were:[5]

	1982-1984	
	Compound Annual Membership Growth	*Profit Margin*
MedCenter	15.6%	(0.4%, 1.9%, 1.5%)
PHP	35.5%	(5.1%, 4.0%, 5.4%)
SHARE (Merged w/PHP 1985)	40.9%	(4.8%, 5.3%, 3.1%)
Group Health	5.8%	(----, 8.6%, 5.6%)

4. Consolidation to achieve economies of scale merger of computer systems and marketing strengths takes place. Thus, MedCenter and Nicollet-Eitel merged in 1983, PHP and SHARE earlier this year, HMO-Minnesota and Coordinated Health Care just recently. Suddenly, instead of seven Twin Cities' HMOs, we have four.

- Lastly, regional HMOs began to go national. United Health Care, the for-profit holding company that manages PHP and SHARE, now has 21 HMOs operational across the United States and will soon go critical with 10 more. SHARE has plans in Iowa, Illinois, and Texas. MedCenters has an arrangement with the Mason Clinic in Seattle. Group Health has struck a deal with Prudential Life Insurance Company to handle their fee-for-service patients. The Mayo Clinic has expanded to Jacksonville and Phoenix to take advantage of the population shift from the snowbelt to the sunbelt.

Summary

I shall conclude by summing up what I have said. I have said that Minnesota rural hospitals are undergoing a drastic decrease in use; that the moves of Twin Cities HMOs to expand rurally will further decrease their use; that Twin Cities hospitals are luring away patients from smaller rural hospitals; that rural economic depression is exacerbating the plight of outstate hospitals and physicians; that Twin Cities HMOs have reached a second phase of their development—decreased profit and decreased growth—that leads to rural expansion; and that you ought to be aware of these changes as you adjust to realities.

Richard L Reece MD

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Lung Hazards on the Farm Brochure Available

A new 16-page brochure on agricultural lung hazards is available from the American Lung Association of Minnesota. This free brochure is designed for agricultural workers and their families. The brochure discusses the dangers posed by moldy hay, confinement building, manure pits, grain bins, silos, and chemicals and pesticides. The keys to avoiding lung hazards through protection and prevention are also given.

Copies of *Agricultural Lung Hazards* are available by writing or calling the American Lung Association of Minnesota, 614 Portland Avenue, St. Paul, Minnesota 55102. 1-800-642-5864, toll-free.

Lymphomatous Leptomeningitis with Prolonged Survival

JOHN K. MEINERT, M.D., F.A.C.P.*

Lymphomatous leptomeningitis is being recognized with increasing frequency. Although many patients respond to treatment, prolonged survival is uncommon. The patient reported has survived five years with a good quality of life.

Lymphomatous leptomeningitis has become an increasingly frequent complication in the management of non-Hodgkin's lymphoma. Although many cases respond to treatment, prolonged survival with a good quality of life is distinctly uncommon. The patient reported has at this time lived five years since the diagnosis of central nervous system involvement and over three years since discontinuation of all therapy of her lymphoma. She has had an excellent quality of life.

Report of Case

A fifty-year-old white woman presented in August, 1980 with symptoms of right leg pain. She had had intermittent edema of both legs for several months. An abdominal mass was demonstrated on physical examination and confirmed by Xray and ultrasound studies as well as by CT scan. At laparotomy, a right retroperitoneal mass was found. Biopsy revealed diffuse well differentiated lymphocytic lymphoma. Staging, including bone marrow examination, failed to reveal other evidence of disease. No studies of the central nervous system were performed.

Chemotherapy with cyclophosphamide, vincristine, and prednisone was instituted in September, 1980. Little change in the size of the mass occurred after three cycles of this therapy. There was no improvement in the pain and weakness in the right leg. Therapy was changed to a program employing doxyrubicin, cyclophosphamide, vincristine, and prednisone. Before a second course of these drugs could be administered, she developed symptoms of headache, nausea, and vomiting. Examination on hospital admission showed that the abdominal mass was somewhat smaller. Her right leg was unremarkable except for absence of the patellar reflex.

After admission, the headache worsened, and she developed a left seventh cranial nerve palsy. Head CT scan was normal. Lumbar puncture revealed a pressure of 236 mm. of H_2O. Spinal fluid studies included a protein of 460 mg%, glucose 0mg%, cell count of 87 with 90% neutrophils. Cytology suggested immature lymphocytes.

She was transferred to Methodist Hospital, Minneapolis, Minnesota, to the care of Dr. J. P. Carlson. Repeat spinal fluid cytology was considered consistent with malignant cells. Functions of her right leg deteriorated. Treatment included high dose dexamethasone, radiation to the entire cranial-spinal axis, intrathecal methotrexate, and high dose systemic methotrexate with leukovorin rescue. The latter resulted in considerable reduction in the size of the abdominal mass.

She was transferred back to Rice Memorial Hospital, Willmar, Minnesota, in late January, 1981, for physiotherapy. She continued on intrathecal methotrexate and cytosine arabinoside via an Omya reservoir. A systemic therapeutic program employing bleomycin, CCNU, doxyrubicin, and velban was also instituted. Gradual improvement occurred. Evidence of infection of the Omya reservoir developed necessitating its removal in July, 1981. There was no evidence of central nervous system infection. Spinal fluid studies were negative. She remained on systemic therapy until April, 1982.

She continues to be well and participates in all her family's activities to the present time. The right paralumbar mass is still palpable and demonstrable on CT scan. I believe this represents necrotic tumor with fibrosis. Recently she has developed mild axillary adenopathy which is being observed. No significant neurological abnormalities are demonstrable.

Discussion

This case is remarkable, and therefore reportable for several reasons. Although patients with lymphomatous leptomeningitis frequently respond to therapy, their survival after this complication develops is usually brief. Reported series describe median survival following diagnosis as from two to eight months. Occasional survivals of two or more years have been reported.

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This complication ordinarily occurs in the poor prognosis groups of non-Hodgkin's lymphoma such as poorly differentiated or undifferentiated diffuse lymphocytic lymphoma and histiocytic lymphoma. This patient had well differentiated lymphocytic lymphoma, which has a relatively good prognosis. One author stated that this complication "never" occurs in well differentiated lymphocytic lymphoma.

Very possibly the most important factor in this woman's prolonged survival with excellent quality of life is the fact that her systemic disease was controlled. In all of the series reviewed, those who survived the longest were in remission from the standpoint of their systemic disease as well. In fact, most of these patients die from their systemic disease.

Acknowledgment

J. P. Carlson, M.D., Oncology and Hematology Section, Park Nicollet Medical Center, St. Louis Park, Minnesota.

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ronary artery spasm and in the management of chronic stable
gina (classic effort-associated angina) in patients who cannot
erate therapy with beta-blockers and/or nitrates or who remain
mptomatic despite adequate doses of these agents.

ferences:
Strauss WE, McIntyre KM, Parisi AF, et al: Safety and efficacy
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nducible chronic stable angina with diltiazem: Effect on treadmill
exercise. Chest 78 (July suppl):234-238, 1980.

Reduces angina attack frequency*
42% to 46% decrease reported in multicenter study.[1]

Increases exercise tolerance*
In Bruce exercise test,[2] control patients averaged 8.0 minutes to onset of pain; Cardizem patients averaged 9.8 minutes ($P<.005$).

CARDIZEM®
(diltiazem HCl)

THE BALANCED
CALCIUM CHANNEL BLOCKER

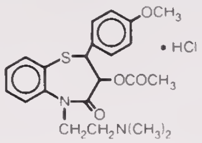
Please see full prescribing information on following page. 2/84

PROFESSIONAL USE INFORMATION

cardizem®
(diltiazem HCl)
30 mg and 60 mg tablets

DESCRIPTION

CARDIZEM® (diltiazem hydrochloride) is a calcium ion influx inhibitor (slow channel blocker or calcium antagonist). Chemically, diltiazem hydrochloride is 1,5-8enzothiazepin-4(5H)one,3-(acetyloxy)-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-, monohydrochloride,(+) -cis-. The chemical structure is:



Oiltiazem hydrochloride is a white to off-white crystalline powder with a bitter taste. It is soluble in water, methanol, and chloroform. It has a molecular weight of 450.98. Each tablet of CAROIZEM contains either 30 mg or 60 mg diltiazem hydrochloride for oral administration.

CLINICAL PHARMACOLOGY

The therapeutic benefits achieved with CAROIZEM are believed to be related to its ability to inhibit the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.

Mechanisms of Action. Although precise mechanisms of its antianginal actions are still being delineated, CAROIZEM is believed to act in the following ways:

1. Angina Due to Coronary Artery Spasm: CAROIZEM has been shown to be a potent dilator of coronary arteries both epicardial and subendocardial. Spontaneous and ergonovine-induced coronary artery spasm are inhibited by CAROIZEM.
2. Exertional Angina CAROIZEM has been shown to produce increases in exercise tolerance, probably due to its ability to reduce myocardial oxygen demand. This is accomplished via reductions in heart rate and systemic blood pressure at submaximal and maximal exercise work loads.

In animal models, diltiazem interferes with the slow inward (depolarizing) current in excitable tissue. It causes excitation-contraction uncoupling in various myocardial tissues without changes in the configuration of the action potential. Oiltiazem produces relaxation of coronary vascular smooth muscle and dilation of both large and small coronary arteries at drug levels which cause little or no negative inotropic effect. The resultant increases in coronary blood flow (epicardial and subendocardial) occur in ischemic and nonischemic models and are accompanied by dose-dependent decreases in systemic blood pressure and decreases in peripheral resistance.

Hemodynamic and Electrophysiologic Effects. Like other calcium antagonists, diltiazem decreases sinoatrial and atrioventricular conduction in isolated tissues and has a negative inotropic effect in isolated preparations. In the intact animal, prolongation of the AH interval can be seen at higher doses.

In man, diltiazem prevents spontaneous and ergonovine-provoked coronary artery spasm. It causes a decrease in peripheral vascular resistance and a modest fall in blood pressure and, in exercise tolerance studies in patients with ischemic heart disease, reduces the heart rate-blood pressure product for any given work load. Studies to date, primarily in patients with good ventricular function, have not revealed evidence of a negative inotropic effect; cardiac output, ejection fraction, and left ventricular end diastolic pressure have not been affected. There are as yet few data on the interaction of diltiazem and beta-blockers. Resting heart rate is usually unchanged or slightly reduced by diltiazem.

Intravenous diltiazem in doses of 20 mg prolongs AH conduction time and AV node functional and effective refractory periods approximately 20%. In a study involving single oral doses of 300 mg of CAROIZEM in six normal volunteers, the average maximum PR prolongation was 14% with no instances of greater than first-degree AV block. Oiltiazem-associated prolongation of the AH interval is not more pronounced in patients with first-degree heart block. In patients with sick sinus syndrome, diltiazem significantly prolongs sinus cycle length (up to 50% in some cases).

Chronic oral administration of CAROIZEM in doses of up to 240 mg/day has resulted in small increases in PR interval, but has not usually produced abnormal prolongation. There were, however, three instances of second-degree AV block and one instance of third-degree AV block in a group of 959 chronically treated patients.

Pharmacokinetics and Metabolism. Oiltiazem is absorbed from the tablet formulation to about 80% of a reference capsule and is subject to an extensive first-pass effect, giving an absolute bioavailability (compared to intravenous dosing) of about 40%. CARDIZEM undergoes extensive hepatic metabolism in which 2% to 4% of the unchanged drug appears in the urine. In vitro binding studies show CAROIZEM is 70% to 80% bound to plasma proteins. Competitive ligand binding studies have also shown CAROIZEM binding is not altered by therapeutic concentrations of digoxin, hydrochlorothiazide, phenylbutazone, propranolol, salicylic acid, or warfarin. Single oral doses of 30 to 120 mg of CAROIZEM result in detectable plasma levels within 30 to 60 minutes and peak plasma levels two to three hours after drug administration. The plasma elimination half-life following single or multiple drug administration is approximately 3.5 hours. Oesacetyl diltiazem is also present in the plasma at levels of 10% to 20% of the parent drug and is 25% to 50% as potent a coronary vasodilator as diltiazem. Therapeutic blood levels of CAROIZEM appear to be in the range of 50 to 200 ng/ml. There is a departure from dose-linearity when single doses above 60 mg are given; a 120-mg dose gave blood levels three times that of the 60-mg dose. There is no information about the effect of renal or hepatic impairment on excretion or metabolism of diltiazem.

INDICATIONS AND USAGE

1. **Angina Pectoris Due to Coronary Artery Spasm.** CAROIZEM is indicated in the treatment of angina pectoris due to coronary artery spasm. CAROIZEM has been shown effective in the treatment of spontaneous coronary artery spasm presenting as Prinzmetal's variant angina (resting angina with ST-segment elevation occurring during attacks).
2. **Chronic Stable Angina (Classic Effort-Associated Angina).** CAROIZEM is indicated in the management of chronic stable angina. CAROIZEM has been effective in controlled trials in reducing angina frequency and increasing exercise tolerance.

There are no controlled studies of the effectiveness of the concomitant use of diltiazem and beta-blockers or of the safety of this combination in patients with impaired ventricular function or conduction abnormalities.

CONTRAINDICATIONS

CAROIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. **Cardiac Conduction.** CAROIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.
2. **Congestive Heart Failure.** Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt). Experience with the use of CAROIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. **Hypotension.** Decreases in blood pressure associated with CAROIZEM therapy may occasionally result in symptomatic hypotension.
4. **Acute Hepatic Injury.** In rare instances, patients receiving CAROIZEM have exhibited reversible acute hepatic injury as evidenced by moderate to extreme elevations of liver enzymes. (See PRECAUTIONS and ADVERSE REACTIONS.)

PRECAUTIONS

General. CAROIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.

Drug Interaction. Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CAROIZEM. (See WARNINGS).

Controlled and uncontrolled domestic studies suggest that concomitant use of CAROIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.

Pregnancy. Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.

There are no well-controlled studies in pregnant women; therefore, use CAROIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, exercise caution when CAROIZEM is administered to a nursing woman if the drug's benefits are thought to outweigh its potential risks in this situation.

Pediatric Use. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CAROIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences, as well as their frequency of presentation, are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1 asthenia (1.2%), AV block (1.1%). In addition, the following e were reported infrequently (less than 1%) with the order of pres tion corresponding to the relative frequency of occurrence.

Cardiovascular:	Flushing, arrhythmia, hypotension, brac dia, palpitations, congestive heart fa syncope.
Nervous System:	Paresthesia, nervousness, somnol tremor, insomnia, hallucinations, and amr
Gastrointestinal:	Constipation, dyspepsia, diarrhea, vom mild elevations of alkaline phosphatase, SGPT, and LOH.
Dermatologic:	Pruritus, petechiae, urticaria, photosensi
Other:	Polyuria, nocturia.

The following additional experiences have been noted:

A patient with Prinzmetal's angina experiencing episod vasospastic angina developed periods of transient asympto asystole approximately five hours after receiving a single 6 dose of CAROIZEM.

The following postmarketing events have been reported quently in patients receiving CAROIZEM: erythema multiforme kopenia; and extreme elevations of alkaline phosphatase, SGPT, LOH, and CPK. However, a definitive cause and effect bet these events and CAROIZEM therapy is yet to be established.

OVERDOSAGE OR EXAGGERATED RESPONSE

Overdosage experience with oral diltiazem has been lim Single oral doses of 300 mg of CAROIZEM have been well tole by healthy volunteers. In the event of overdosage or exagge response, appropriate supportive measures should be employ addition to gastric lavage. The following measures may be consid

Bradycardia	Administer atropine (0.60 to 1.0 mg). If is no response to vagal blockade, admin isoproterenol cautiously.
High-Degree AV Block	Treat as for bradycardia above. Fixed degree AV block should be treated with diac pacing.
Cardiac Failure	Administer inotropic agents (isoprote dopamine, or dobutamine) and diuretics.
Hypotension	Vasopressors (eg, dopamine or levarter bitartrate).

Actual treatment and dosage should depend on the severity o clinical situation and the judgment and experience of the tre physician.

The oral/LO_{50}'s in mice and rats range from 415 to 740 m and from 560 to 810 mg/kg, respectively. The intravenous LO_{5} these species were 60 and 38 mg/kg, respectively. The oral LD dogs is considered to be in excess of 50 mg/kg, while lethality seen in monkeys at 360 mg/kg. The toxic dose in man is not kn but blood levels in excess of 800 ng/ml have not been associ with toxicity.

DOSAGE AND ADMINISTRATION

Exertional Angina Pectoris Due to Atherosclerotic C nary Artery Disease or Angina Pectoris at Rest Due to C nary Artery Spasm. Dosage must be adjusted to each patie needs. Starting with 30 mg four times daily, before meals an bedtime, dosage should be increased gradually (given in div doses three or four times daily) at one- to two-day intervals optimum response is obtained. Although individual patients respond to any dosage level, the average optimum dosage ra appears to be 180 to 240 mg/day. There are no available data conc ing dosage requirements in patients with impaired renal or hep function. If the drug must be used in such patients, titration shoul carried out with particular caution.

Concomitant Use With Other Antianginal Agents:

1. **Sublingual NTG** may be taken as required to abort a anginal attacks during CAROIZEM therapy.
2. **Prophylactic Nitrate Therapy** — CAROIZEM may be sa coadministered with short- and long-acting nitrates, but t have been no controlled studies to evaluate the antiang effectiveness of this combination.
3. **Beta-blockers.** (See WARNINGS and PRECAUTIONS.)

HOW SUPPLIED

Cardizem 30-mg tablets are supplied in bottles of 100 (0088-1771-47) and in Unit Dose Identification Paks of 100 (0088-1771-49). Each green tablet is engraved with MARION on side and 1771 engraved on the other. CAROIZEM 60-mg sc tablets are supplied in bottles of 100 (NOC 0088-1772-47) and in Dose Identification Paks of 100 (NOC 0088-1772-49). Each ye tablet is engraved with MARION on one side and 1772 on the o

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Hearing Preservation in Acoustic Neuroma Surgery

STEPHEN J. HAINES, M.D.* AND
TIMOTHY T. K. JUNG, M.D.*

A case is reported of a 37-year old man with moderate hearing loss in the left ear who was found to have a small acoustic neuroma on that side. The tumor was excised with preservation of useful hearing in the left ear. The possibility of hearing preservation in acoustic neuroma surgery is discussed.

The goal of central nervous system tumor resection has always been total removal of tumor tissue with maximal preservation of normal function. Early in the history of surgery for acoustic nerve tumors, the tumors were found only when they had become very large causing significant central nervous system dysfunction in addition to hearing loss. The goal of surgery in such cases was to preserve life , and salvage of cranial nerve function was of secondary importance. As diagnostic and surgical techniques have improved, smaller tumors are being found and operated upon , and even in large tumors preservation of facial nerve function is an attainable goal in most cases. The logical extension of this trend is to find and remove eighth nerve tumors before hearing has been irretrievably lost and preserve function of this nerve as well. Our recent experience with such a case is reported.

Case Report

A 37-year-old man experienced sudden loss of hearing in the left ear which lasted for two days and then recovered completely. He began to experience mild intermittent tinnitus and sensations of aural pressure with loudness into lerance. Seven months later he again suddenly lost hearing in the left ear which resolved in two days. He gave a history of two episodes of vertigo lasting a few days each that occurred four years prior to his episodes of hearing loss.

He was admitted to the hospital where his general physical and neurological exa minations were normal. The audiogram demonstrated normal hearing in the right ear and 27 dB hearing loss in the left with 100 percent speech discrimination bilaterally (Figure 1). he had a normal electronystagmogram with normal caloric and rotational testing. The volume of sound required to elicit the left stapedius reflex was elevated suggesting an eighth nerve lesion. Tomograms of the internal auditory canal

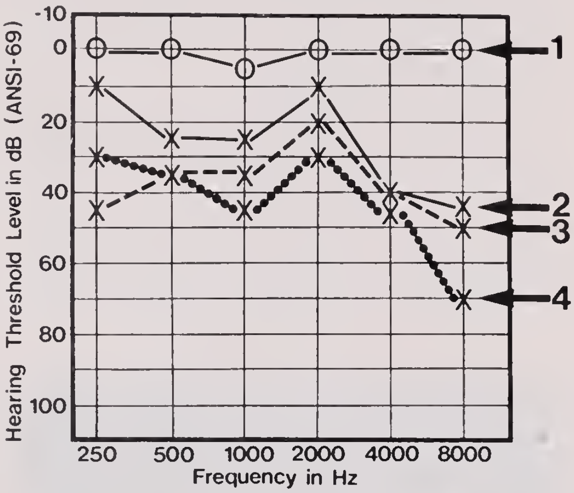

Fig. 1 - Pure tone audiograms of the normal right ear (1) and abnormal left ear: just before surgery (2), five days after surgery (3) and six weeks after surgery (4).

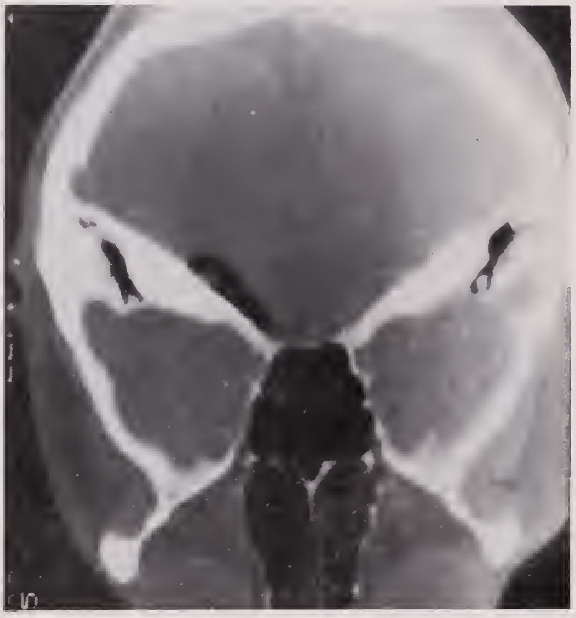

Fig. 2 - Air contrast computerized tomographic scan of the left cerebellopontine angle demonstrating a small acoustic neuroma (arrow).

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*Departments of Neurosurgery and Otolaryngology, University of Minnesota Medical School, Minneapolis.

were normal as was a CT scan of the head with intravenous contrast enhancement.

Because of the sudden onset of hearing loss and associated vertigo, an initial diagnosis of perilymph fistula was made and an exploratory tympanotomy performed on the left. There was some scarring in the region of the round window but no fistula was demonstrated.

The CT scan was repeated with 6 cc of air injected by lumbar puncture and manipulated into the left cerebellopontine angle. This showed a small tumor adjacent to the internal auditory canal and extending approximately 1 cm into the cerebellopontine angle cistern (Figure 2).

The tumor (Figure 3) was totally excised through a retromastoid craniectomy with anatomic preservation of the facial cochlear and inferior vestibular nerves. The patient was able to hear conversation in the left ear in the recovery room. His posto perative course has been uncomplicated and, although he can tell that his hearing in the left ear is somewhat worse than preoperatively, he feels that it is useful and helps him localize sounds. Postoperative audiometry showed a pure tone average hearing loss of 30 dB five days postoperatively and 37 dB six weeks after surgery (Figure 1). Speech discrimination has remained 100 percent.

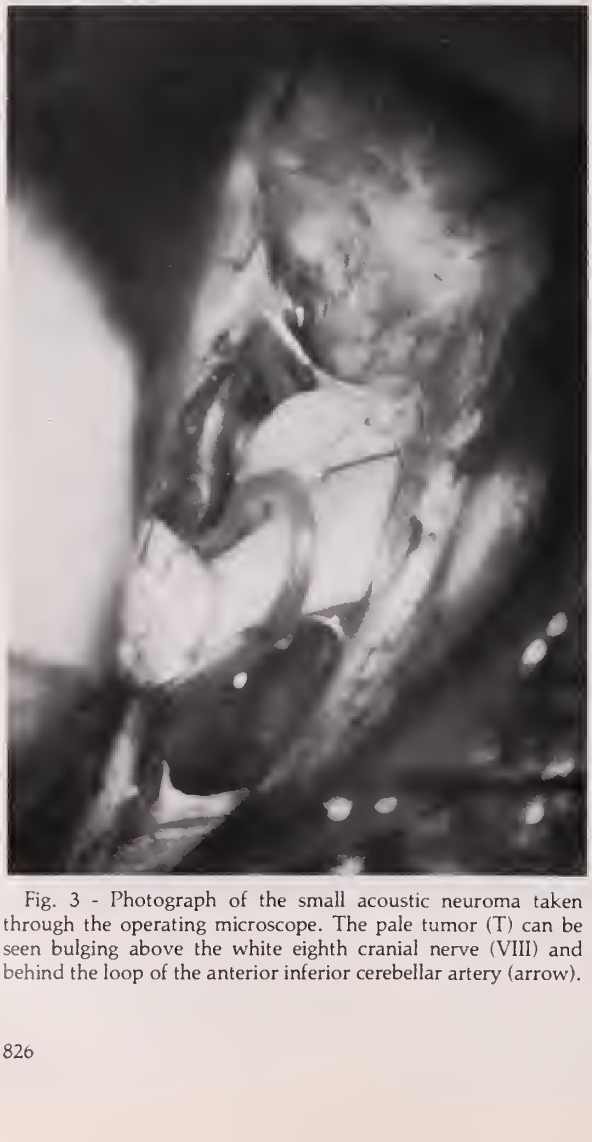

Fig. 3 - Photograph of the small acoustic neuroma taken through the operating microscope. The pale tumor (T) can be seen bulging above the white eighth cranial nerve (VIII) and behind the loop of the anterior inferior cerebellar artery (arrow).

Discussion

This case emphasizes several points of importance in evaluating hearing loss and treating acoustic neuroma. The first is that acoustic tumors do not necessarily present in a sterotypic way with irreversible loss of hearing. As many as onethird of patients first seek medical attention for non-audiologic complaints such as headache, disequilibrium and facial numbness,[7] and the hearing loss may be sudden or fluctuating rather than slowly progressive.[8] A high index of diagnostic suspicion is necessary to find small tumors that have not yet caused irreversible hearing loss. These small tumors can be safely removed at an early stage with preservation of useful hearing. Second, our experience reemphasizes the point that hearing preservation is possible in some acoustic neuroma surgery. Finally, the evolution of safe and relatively simple but sophisticated diagnostic imaging techniques has made it both possible and reasonable to aggressively look for these small lesions in patients who may have few objective signs of nervous system dysfunction.[13]

It has been known at least since McKissock's experience in the late 1950s[14] that some hearing could be preserved in small acoustic tumors. A number of small series acoustic tumors with hearing preservation have subsequently been reported.[1,2,4,6,9,12] There is even a report of improved hearing after resection of a tumor 3 cm in diameter.[3]

Acoustic neuromas in patients with neurofibromatosis may be more difficult to cleanly dissect from surrounding structures, and it has been quite unusual to preserve hearing in these patients, although it has been reported.[11] This is unfortunate as these patients have a tendency to develop bilateral tumors with consequent total loss of hearing.

While hearing preservation is most likely in small tumors, both because of the preoperative hearing status and the ease of surgery, hearing has been preserved in tumors as large as 5 cm in diameter.[1]

Microsurgical technique and drilling of the posterior aspect of the internal auditory canal are important in accomplishing hearing preservation. The use of intraoperative auditory evoked potentials[5] or direct acoustic nerve recordings[10] may increase the likelihood of success.

Whenever the preoperative hearing is serviceable (hearing threshold better than 50 dB and speech discrimination better than 50%), every effort should be made to preserve hearing.

Of the three standard surgical approaches to acoustic neuromas (middle fossa, translabyrinthine and suboccipital or retromastoid), only the middle fossa and retromastoid approaches are appropriate for attempts to preserve hearing. The translabyrinthine approach cannot preserve hearing. Its major advantage is complete exposure of the lateral margin of the tumor and complete removal of tumor involving the labyrinth. The middle fossa approach is generally limited to very small tumors (less than 1 cm of tumor extending into the cerebellopontine angle cistern) and is ideal for intracanilicular tumors. The retromastoid approach allows better visualization of the medial and inferior intracranial portions of the tumor and is appropriate for any size tumor. With drilling of the posterior and medial portions of the internal auditory canal, the intracana licular portion of the tumor can be removed. We believe that a combinmed neuro-oto-surgical approach to evaluation and treatment of these tumors allows selection of the optimal surgical approach and provision of optimal pre and postoperative care for these patients.

Acknowledgment

The authors would like to thank Drs. William Randolph and Michael Paparella for referring the patient for care.

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Sports Related Injury
An Anatomic Approach
Part 2

RICHARD E. JOHNSON, M.D.* and
ROBERT J. RUST, M.D.†

Injuries occur when athletic objectives exceed physiologic tolerance. Multiple factors ranging from gender, physical condition, physical anomalies, and previous injury, to rules of competition, substance abuse, training techniques, equipment, and training surfaces all affect the incidence and type of athletic injury. One cannot justify the omission of the x-ray exam in a patient who has suffered trauma if there exists any possibility of a positive finding. Appropriately positioned routine views, adequate clinical history, stress views, delayed reexamination (i.e. reradiograph in seven to 10 days), and technically optimal films all contribute to better patient care. The radiologist, in particular, must pay particular attention to maintaining high quality assurance. Any disruption in the chain of imaging can lead to erroneous false negatives or positives and, therefore, inappropriate therapy.

Cervicocranial

Computed tomography has become the gold standard but plain film examination supported by myelography continues to play a crucial diagnostic role in evaluation of the cervicocranial region. The major source of lifelong disability for the teenage athlete, cervical spine injury with resultant quadriplegia, is caused by the collision sports (American football and rugby), wrestling, gymnastics (especially trampoline), and diving. The cervical spine x-ray trauma series should include AP, lateral, odontoid, and flexion/extension lateral projections. The latter is to assess stability, however, it should never be forced on the comatose or inebriated patient. Major head injuries such as concussion, fracture, and intracranial hemorrhage are most frequently seen in boxing, soccer, baseball, and those sports with the potential for high velocity collisions such as cycling, diving, snowmobiling, etc. "Small ball" sports (handball, squash, tennis, baseball, etc.) are most frequently implicated in "blow out" fractures of the orbits. These are best evaluated by computed tomography or polytomography.

Spine/Pelvis/Hips

Almost half of all young athletes with lumbar pain for more than three months are found to have a spondylolysis or fracture of the pars interarticularis. This is especially true for gymnasts, weightlifters, butterfly stroke swimmers, and football linemen. The differential diagnosis for an athletes' back pain includes muscle strains, Scheuermann's epiphysitis, vertebral body fracture, ruptured disc, disc space infection, osteoid osteoma or aneurysmal bone cyst, and ankylosing spondylitis. Genitourinary or rectal tumors, osteoporosis, degenerative arthritis and multiple myeloma or metastatic disease are a consideration for the older athlete.

Radiographic exams should include AP, lateral, oblique and standing flexion/extension plain films with consideration of C.T. or metrizamide myelography for those patients with clinical radiculopathy. Technetium radionuclide bone scan, though nonspecific, is an extremely sensitive indicator of early infection or occult fracture or neoplasm.

"Hip pointers" are painful contusions from a direct blow to the iliac crest (e.g. football helmet) but an Xray is taken to rule out an iliac crest fracture. Osteitis pubis (soccer players and runners) and groin strains (hockey, bowling and football) manifest radiographically, respectively, as increased sclerosis of the pubic symphysis and myositis ossificans at the insertion of the adductors on the ischial ramus.

Avascular necrosis of the femoral head (five-12 year olds) shows early bony rarefaction and late collapse and sclerosis of the head. Early diagnosis of avascular necrosis is best evaluated with a nuclear bone scan which tends to show a photopenic defect early, secondary to loss of blood flow. This defect will then change to an area of increased uptake later in the disease as blood flow is reestablished and bone healing (sclerosis) occurs. Slipped capital femoral epiphysis (nine-15 year olds) will manifest early with subtle widening of the growth plate and rarefaction of the metaphysis, and late "tilt deformity" with eccentric, posteromedial displacement of the head relative to the femoral neck (frog-leg lateral Xray). Bone cysts with pathologic fracture and primary bone tumors are an infrequent cause of hip pain but can be excluded by plain film radiograph.

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Shoulder

Three-dimensional mobility is gained from the ball and socket configuration of the glenohumeral joint but, as the most mobile joint in the body, the shoulder is structurally insecure. Although the arm is low in actual weight, it has a long lever and presents large torques to the muscles around the shoulder, reflected in the fact that 8-13% of all athletic injuries involve the shoulder, either by trauma or overusage. As related to specific sports, shoulder injuries are as follows:

Baseball - Muscle strains, bursitis, posteroinferior glenoid exostosis, stress fracture of the first rib and fracture of the coracoid process.

Bicycling - Fractured clavicle, acromioclavicular separation, and glenohumeral dislocations.

Football - One-third strains, one-third acromioclavicular separation, one-third dislocations of the glenohumeral joint (majority of which are anteroinferior dislocations).

Javelin Throwers - Bicipital tendinitis secondary to an impingement syndrome due to explosive throwing motion.

Tennis - Anterior rotator cuff symptoms, parascapular pain, bicipital tendinitis/impingement syndrome, trapezius and pectoralis muscle strain. "Tennis shoulder" refers to drooped, internally rotated shoulder which may have associated thoracic outlet syndrome and neck pain.

Swimming - Overuse manifested as bicipital tendinitis from impingement syndrome.

Volleyball - Bicipital tendinitis.

Wrestling - Falls produce acromioclavicular injuries and twisting/leverage maneuvers produce glenohumeral dislocations.

Trap Shooting/Hunting - Stress fracture of the corocoid process secondary to repeated direct trauma from the rifle butt.

Plain film radiographic exam should include AP (internal, external rotation), lateral or axillary views, and Grashey views of the glenoid fossa. (It should be noted that plain radiographs are usually normal with rotator cuff injury.) Chronic injury can lead to soft tissue calcification (calcific tendinitis) which can be recognized on the plain films. Dislocations of the shoulder can be visualized with plain films, as can the sequelae of such trauma, i.e. fracture of the inferior glenoid rim "Bankhart deformity" and fracture of the superolateral humeral head "Hill-Sachs deformity." When plain films are normal, one should consider further evaluation with arthrography. Shoulder arthrography is a simple, relatively safe and painless diagnostic procedure for identifying abnormalities of the glenohumeral articulation (example: rotator cuff tears, lesions of biceps tendon, adhesive capsulitis, i.e., frozen shoulder). C.T. examination of the shoulder has also been proven to be useful in the diagnosis of tears of the glenoid labrum.

Elbow

"Little League Elbow" (baseball pitchers) is classically an avulsion of the ossification center of the medial epicondyle in adolescents, secondary to the valgus stress of throwing. The worst changes, however, are chronic and occur laterally due to the repeated "jamming" of the radial head into the capitellum at the end of the throwing motion. This can result in avulsion fractures, bony spur formation, osteochrondritis dissecans, and loose bodies. Javelin throwers, like baseball pitchers, sprain the medial collateral ligament of the elbow, but with the explosive release they also may fracture the olecranon tip of the ulna. "Tennis elbow" refers to pain at the lateral epicondyle and related to a faulty backhand.

Wrist and Hand

The hand, used in almost every sport in one way or another and characteristically in front of the athlete, frequently absorbs the initial contact. Scaphoid fracture, lunate and perilunate dislocation, fracture of the hook of the hamate (golf, tennis or baseball swing), injury to the ulnar collateral ligament of the thumb due to forced abduction (football, skiers, wrestlers and hockey players), metacarpal (Boxer's) fractures, and "mallet" or "drop" finger deformity due to extensor tendon injury at DIP joints (football receivers, baseball catchers and basketball players) are frequently encountered injuries that require x-ray evaluation. AP, lateral, and oblique films evaluate the carpals. If these are negative, but clinical suspicion of navicular fracture remains high, then AP films with ulnar and radial deviation of the wrist is recommended. Bone scan can be of help in evaluation of difficult cases.

Long Bones

The tibia (usually posteromedial cortex), fibula, metatarsals and ribs are particularly prone to stress fractures. These may be occult and unidentifiable on plain Xray. Either delayed Xray in seven to 10 days which reveals callus formation or a nuclear medicine bone scan are recommended to confirm the diagnosis and help differentiate from "shin splints" (periostitis or myositis) in the lower leg.

Knee

The knee without the bony stability of the hip or the ankle is one of the most vulnerable joints of the body. Running is a series of jumps that exerts varying shock forces on the knee depending on the supporting musculature, runner's weight and degree of flexibility, foot anatomy, and the running surface. "Jumping," "cutting" (altering running gait and direction), and "kicking" maneuvers are frequently implicated in the following injuries to the knee: quadriceps tendon rupture, prepatellar bursitis, patellar dislocation, chondromalacia ("runner's knee"), patellar tendon rupture, Osgood-Schlatter's condition, iliotibial band friction syndrome, popliteus tenosynovitis, capsular strain, chondral fracture, meniscal tear, osteochondritis dissecans, joint effusion, loose joint body, acute ligamentous tears and dislocation of the knee.

Arthrography will compliment the clinical examination and may confirm the diagnosis, but, in many cases, the orthopedic surgeon may assess and treat arthroscopically extensor mechanism abnormalities, meniscal tears, and extrameniscal abnormalities such as fibrous shelves, chondral and osteochondral fractures, osteochondritis dissecans and loose bodies. Plain radiographs that may prove helpful include AP, lateral, oblique, tangential, patellar, tunnel, weight bearing and stress views. Baseline and sequential radiographs are helpful for documenting and following degenerative osteoarthritis, particularly in this era of prostheses.

Ankle

Ankle injuries constitute 20-25% of all time-loss injuries in every running or jumping sport. The ankle, functionally a hinge joint that permits only dorsal and plantar flexion, is most susceptible to inversion sprain and injury to the lateral ligamentous complex. Routine radiographic views include at least three projections, i.e., AP, lateral, and mortise view. Stress mortise views are necessary to document ligamentous instability (widening of the ankle mortise greater than 5′), but normal alignment under stress without anesthesia may not exclude significant ligamentous injury due to muscle guarding and pain. Arthrography is recommended to be performed early as fibrin clot may seal tears resulting in false negative results. Arthrography is specific for tears of the anterior tibiofibular and deltoid ligaments.

Foot

Talar fractures, cysts, avascular necrosis, degenerative spur formation, and stress fractures (primarily metatarsals and calcaneus) require radiographic and radionuclide examination for accurate diagnosis. Foot anomalies like hallux valgus or Morton's foot (short first metatarsal) predispose the athlete to foot injury.

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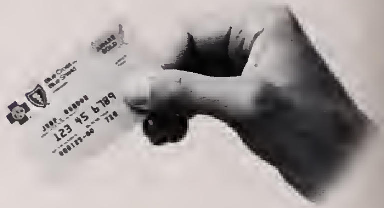

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Clinical Manifestations of Chronic Leukemias

ATHANASIOS THEOLOGIDES, M.D., Ph.D.*

The symptoms and signs of chronic leukemias parallel the degree of leukocytosis and organ infiltration with the proliferating cell clone. The clinical features are frequently overshadowed by manifestations of complications.

Chronic leukemias are hematologic malignancies with mild clinical manifestations initially, a slow clinical course, and a relatively long survival. The symptoms and signs of the disease are in general the result of the infiltration of one or more organs by the leukemic cells, usually the bone marrow, lymph nodes, spleen and liver. In the blood, the leukemic cells appear as mature cells initially, and the increase in their number suggests the diagnosis.[1,2]

The common chronic leukemias are divided into two main nosologic entities, chronic lymphocytic and chronic myelocytic leukemia. Because there are a number of less common variants, there is a tendency to group them under the terms chronic lymphoproliferative and chronic myeloproliferative syndromes.

Chronic Lymphocytic Leukemia (CLL)

CLL is a disease of older persons (median age of sixty years) with a 3:2 male to female ratio. The incidence is about 20 cases per million population per year, and it represents about 15 percent of the cases of leukemias and about 30 percent of the chronic leukemias. There are no known etiologic factors. The disease is characterized by increased production of mature appearing lymphocytes that accumulate because they live longer.

Symptoms

Ten to fifteen percent of the patients have no symptoms at the time when an absolute lymphocytosis is found in the blood incidentally. The early symptoms are easy fatigability, weakness, and painless enlargement of lymph nodes having an insidious onsent. Rarely the onsent may be acute with symptoms of anemia (from a hemolytic process) or with skin manifestations. In some patients, an acute infection leads to the diagnosis of the disease. As the disease progresses, hemorrhagic manifestations may appear. Occasionally early but usually late in the course, symptoms and signs of a hypermetabolic state may appear such as heat intolerance, increased sweating, slight temperature rise, hot flashes, warm moist skin, loss of appetite, and some weight loss. The BMR is elevated, but there are no tremor, irritability, and eye signs of hyperthyroidism.

Other symptoms may result from involvement of the lungs, CNS, genitourinary or gastrointestinal tracts and bones. For instance, a lytic lesion may cause collapse of a vertebra with the respective symptomatology. An interesting manifestation of CLL is an exacerbated skin reaction to insect bites.

Physical Findings

The typical physical finding is generalized peripheral lymphadenopathy with small, soft, nontender, freely movable nodes. As the disease advances, the nodes become more firm and larger. Mediastinal adenopathy may be demonstrated with roentgenograms, and retroperitoneal and abdominal enlarged lymph nodes may be palpated or demonstrated with lymphography, computed tomography or ultrasonography. Enlargement of the tonsils is not uncommon.

At the time of diagnosis, 75% of the patients have splenomegaly, but this is rarely marked. Slight to moderate hepatomegaly is common. Around 35% of the patients have Hb below 12g% with the clinical findings of anemia. With progression of the disease, the anemia becomes worse because of increasing bone marrow replacement. In addition, about 20% of patients will develop a Coombs' positive autoimmune hemolytic anemia. Less than 25% of the cases will have petachiae and ecchymoses as a result of thrombocytopenia secondary to bone marrow leukemic involvement or rarely from an autoimmune process.

Cutaneous manifestations are perhaps more common in CLL than in any other form of leukemia. Leukemia cutis is rare, but may precede the other manifestations by months. Usually leukemids are seen as scattered pruritic, papular, or vesicular lesions. The lesions of CLL can be confused with those of other lymphomas, mycosis fungoides,

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Sezary's Syndrome and various nonspecific rashes. It should be remembered that smallpox vaccination may produce a very severe local reaction and even a generalized vaccinia picture.

A simple staging system proposed by Rai and co-workers is clinically useful for a decision for treatment and prognosis. The system is as follows: Stage 0 - absolute lymphocytosis; stage I - enlarged nodes; stage II - hepato and/or splenomegaly, (nodes may or may not be enlarged); stage III - anemia; and stage IV - thrombocytopenia (nodes, spleen or liver may or may not be enlarged).[3]

As the abnormal cell infiltrates the bone marrow and other organs and deficiencies of normal cells and immunoglobulins develop, a number of complications occur such as infections, with their usual clinical manifestations. Cryoglobulinemia is another rare feature of CLL. It is questionable at this point if there is an increased coincidence and close relation of rheumatoid arthritis, disseminated lupus erythematosus, Sjogren's Syndrome and CLL.

However, it appears that cancer occurs more frequently in patients with CLL than comparable population groups.[4] Skin cancer is the most common cancer with colon cancer next. Colon cancer should be suspected in a patient with CLL and an hypochromic anemia. Richter's Syndrome is the appearance of a "reticulum cell sarcoma," large cell lymphoma in a patient with CLL.[5] Fever (65%), increasing lymphadenopathy (46%), weight loss (23%) and abdominal pain (26%) were the clinical features which characterized the development of such diffuse histiocytic lymphoma.[5]

Hyperuricemia is frequent in CLL and occasionally after cytotoxic chemotherapy and rapid destruction of cells, gouty attacks and renal shutdown have been observed.

Variants of Chronic Lymphoproliferative Syndromes

T-Cell CLL

More than 95% of CLL are B-cell type. In a small percentage of patients, the leukemic cells are T-lymphocytes lacking surface immunoglobulin and forming rosettes with sheep red blood cells and possessing T-cell surface antigens. Patients with T-CLL have skin infiltrations and hepatosplenomegaly without significant lymphadenopathy but major neutropenia.[6] Survival is usually shorter than one year.

Lymphosarcoma Cell Leukemia

Early or late in the course of the disease, patients with a variety of lymphomas may have the malignant cells in the peripheral blood in increasing numbers. The clinical manifestations are those of the respective lymphoma, but when the peripheralization occurs, the course may become worse.

Prolymphocytic Leukemia

Another lymphoproliferative syndrome frequently mimicking CLL is called prolymphocytic leukemia, because the malignant cell is a large lymphocytic cell with large nucleoli and abundant cytoplasm. It is associated usually with significant splenomegaly, insignificant lymphadenopathy and a more rapid course than CLL.[7]

Hairy Cell Leukemia

This is another chronic lymphoproliferative disorder characterized by massive splenomegaly. The malignant cell in the blood and bone marrow is an atypical cell with prominent cytoplasmic projections (hairy cells).[8]

Chronic Myelocytic Leukemia (CML)

Chronic myelocytic leukemia accounts for about 25 percent of all cases of leukemia and for approximately 50% of the chronic leukemias. The incidence is 15 cases per million people per year, and the frequency is the same in men and women. It occurs most often between the ages of 20 and 50. Although specific etiologic mechanism has not been identified, exposure to ionizing radiation has been associated with a higher incidence of CML.

Clinically, there are two major variants of CML: the typical Philadelphia chromosome positive and the atypical lacking the Philadelphia chromosome abnormality.

Symptoms

Approximately 10% of the patients are without symptoms and findings on physical examination, and the diagnosis is made incidentally from the CBC and differential count.

Usual presenting symptoms are those of anemia or vague osteoarthritic pains or symptoms of a hypercatabolic state such as increased sweating, heat intolerance and slight temperature elevation. Weight loss is usually a late feature. Fullness or heaviness in the left upper abdominal quadrant or a self-detected or painful splenomegaly may be another form of presentation. Hemorrhagic tendency such as spontaneous petechiae or excessive bleeding after minor trauma or a dental procedure may be an early or late manifestation of the disease.

Clinical manifestations secondary to hyperuricemia such as an attack of gout or precipitation or uric acid in the renal tubules and anuria may appear before or during treatment of the disease. However, the latter is very rare. When there is significant basophilia, the blood histamine levels may be elevated and urticaria, pruritus and gastroduodenal ulceration may be present. About 1 or 2 percent of the patients complain of priapism.

Physical Findings

Splenomegaly is present in the majority of cases at diagnosis, and the incidence and degree increase as the disease progresses. Massive splenomegaly and splenic infarcts are usually late features, and following an infarct the spleen is tender and there is a splenic friction rub. Slight hepatomegaly is a common finding. Sternal tenderness is occasionally present, but skin lesions are uncommon.

Most of the symptoms and signs parallel directly the degree of leucocytosis, and although leukemic proliferation can take place in any organ, significant involvement of organs other than the spleen, bone marrow and liver are uncommon, before the terminal phase.

Unfavorable prognostic criteria in CML are fever, appearance of lymphadenopathy, skin involvement, significant basophilia, lack of Philadelphia chromosome, appearance of aneuploidy and bone marrow fibrosis.[9] Especially in patients with Philadelphia chromosome negative CML, the clinical course is atypical and the survival shorter.[9]

In the clinical manifestations of CML, the long term complications of Busulfan, the main drug of treatment, should be mentioned. These include dryness of mucous membranes, pulmonary fibrosis, amenorrhea and aspermia, skin hyperpigmentation with a syndrome resembling Addison's disease.

Eventually, the patient enters a terminal phase of the disease that can present either as an accelerated phase or as a blastic crisis. The symptoms as a rule include increasing weakness due to the progressive anemia, weight loss, and discomfort from the splenomegaly. Sixty to 80 percent of patients will develop a transformation into a clinical picture indistinguishable from acute myelogenous leukemia. The blastic crisis may be heralded by the appearance of fever, lymphadenopathy, bone pain hemorrhagic manifestations, increasing spleen and liver size and blast infiltration outside of these two organs and the bone marrow. Increasing basophilia, rising leukocyte alkaline phosphatase values, appearance of multiple Philadelphia chromosomes, development of aneuploidy, appearance of myelofibrosis may also herald an impending blastic transformation and the terminal phase of the disease.[9] Manifestations may be secondary to blast leukostasis in the brain or to meningeal involvement. The usual cause of death is infection or hemorrhage often in association with blast crisis.

Childhood CML

A Philadelphia chromosome positive CML in children behaves clinically the same way as one in adults. However, the Philadelphia negative type which occurs usually in children under six years of age has a more rapid course and is clinically characterized by thrombocytopenia, skin rash, and splenomegaly.

Other Chronic Myeloproliferative Syndromes

A number of chronic myeloproliferative syndromes may present as atypical CML with marked hepatosplenomegaly as a common manifestation.

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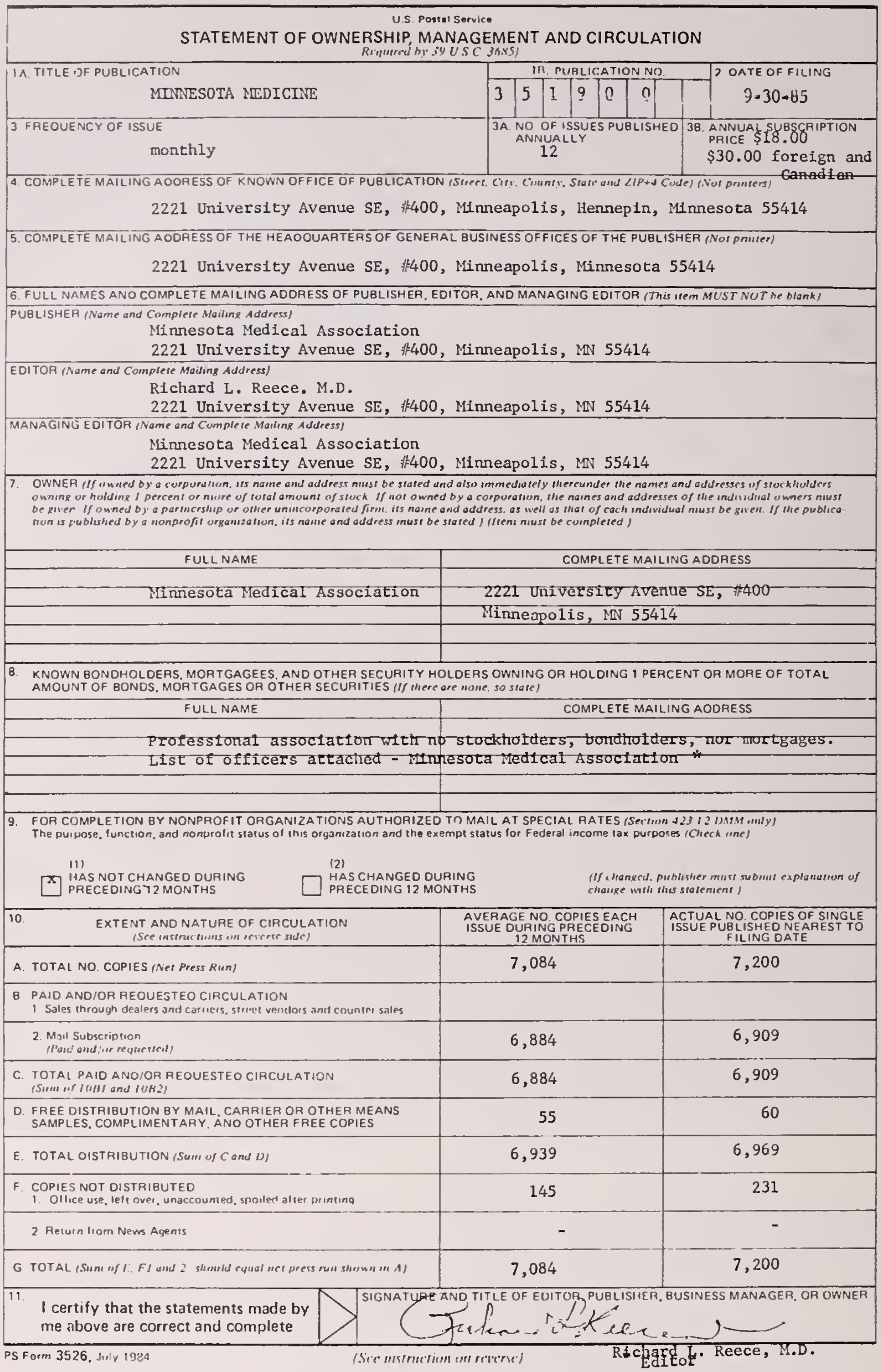

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Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination Dose adjustment of either class of agents may be necessary.

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Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

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Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet.

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus

Nursing Mothers: It is not known whether this drug is excreted in human milk Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman.

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%). An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg; for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours. Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

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COVER PHOTOGRAPH

"Portrait of a Turkey"

Dr. Frances Elizabeth Schaar, retired Minneapolis pediatrician, has become one of Minnesota Medicine's regular cover contributors. Her "Crocus" was on a previous cover. In addition she has had her slides appear on covers in 1966, 1973, 1977, 1980, 1983, and 1984.

She is an excellent photographer and uses a Nikon F. camera with a macro 55 lens in taking most of her slides. In addition to being a very talented photographer, Dr. Schaar is actively involved in part time teaching and various organizations.

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Agenesis of the Septum Pellucidum Associated with Gray Matter Heterotopia

LeROY D. OLSON, M.D.*

An embryologic insult involving the anterior portion of the neural tube may result in any of a spectrum of neurologic defects. These include agenesis of the corpus callosum, septo-optic dysplasia and gray matter heterotopia.

Congenital absence of the septum pellucidum (ASP) may be an isolated and incidental anomaly. However, some cases of ASP are associated with other malformations and may be clinically important. This report describes agenesis of the septum pellucidum and heterotopic gray matter in a patient presenting with seizures. The embryologic development of this anomaly is reviewed.

Case Report

A 23-year-old male had experienced occasional nocturnal seizures from early childhood. The seizure frequency increased to approximately two episodes per week, waking the patient who experienced tonic/clonic movements of the right arm.

Physical exam demonstrated no neurologic deficit. The optic discs appeared normal, and no gross visual field defects were detected. The patient's height of 167 cm. was less than his mother's and father's heights of 170 and 186 cm. respectively. Serum thyroxin was within normal limits.

A head CT scan revealed absence of the septum pellucidum (Figure 1(A)) and a 2 cm. nodule indenting the anterior body of the left lateral ventricle (Figure 1(B)). The attenuation value of the nodule (40 H) did not change significantly after contrast injection and was similar to the density of gray matter in the caudate nucleus. No macroscopic calcification was demonstrated. Cerebral angiography showed no abnormal vascularity. Four years later a follow-up CT scan showed no change in the subependymal nodule (Figure 2).

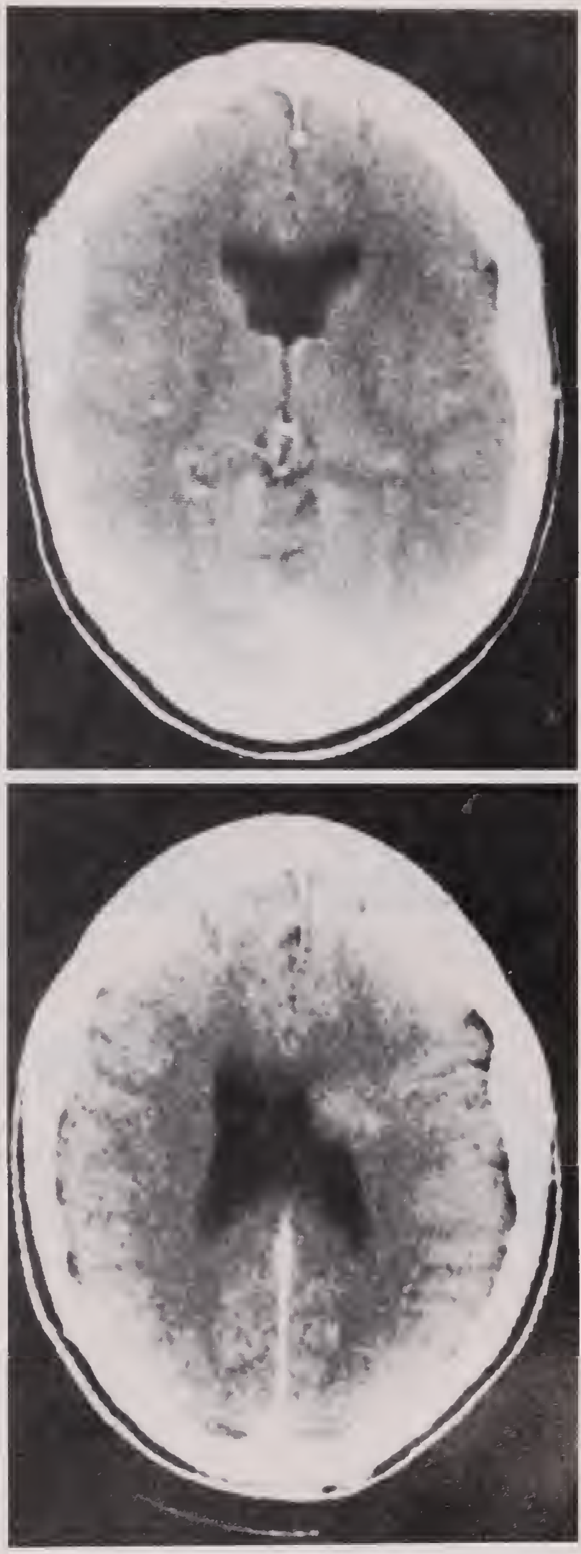

Fig. 1 - Initial enhanced CT revealed (A - top) absence of septum pellucidum, (B - bottom) 2 cm. left subependymal nodule.

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*Department of Radiology, Immanuel - Saint Joseph's Hospital, Mankato, Minnesota.

Discussion

The rostral end of the developing neural tube in a fetus consists of a midline membrane (lamina terminalis) flanked by bulging telencephalic vesicles. The vesicles form the cerebral hemispheres, while the lamina terminalis becomes the anterior wall of the third ventricle. The lamina terminalis also contains the anlage for the corpus callosum, septum pellucidum, optic nerves and the posterior pituitary. For this reason, malformations of these structures are often associated.

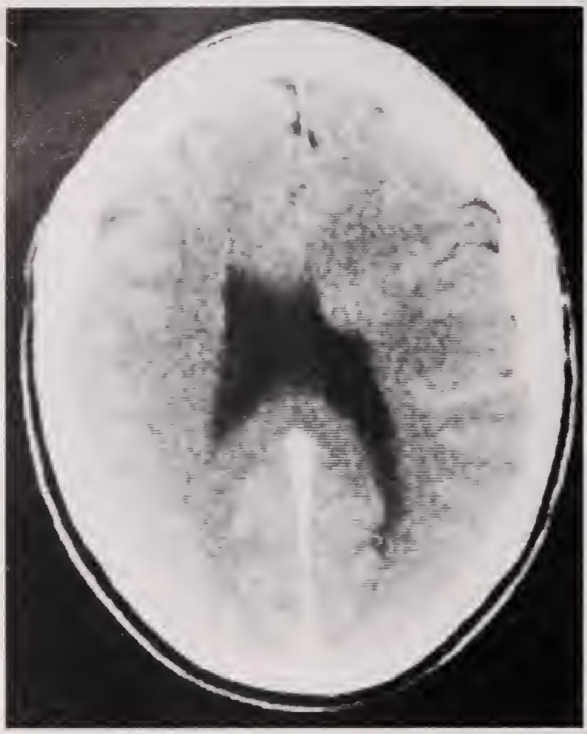

Fig. 2 - Follow-up CT four years later reveals no change in the characteristics of the left subependymal nodule.

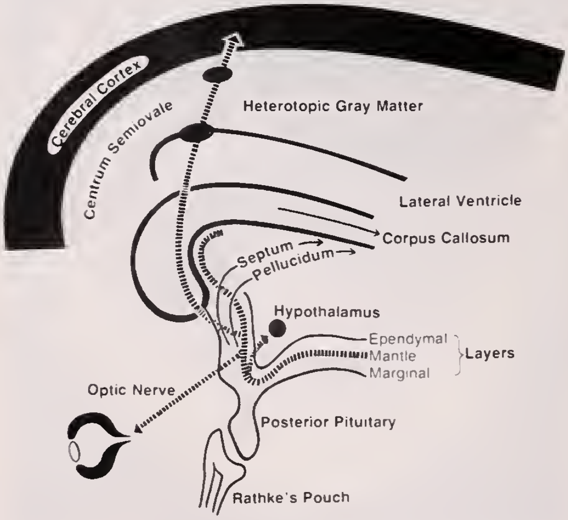

Fig. 3 - Schematic diagram of lamina terminalis and migration routes of its layers. Shaded area represents the marginal layer and the structures that issue from it including the corpus callosum and septum pellucidum. Broken lines represent the mantle layer and the migrational routes of its neuroblasts.

The wall of the neural tube consists of (1) an inner ependymal lining, (2) a mantle layer which will develop into neuroblasts, and (3) an outer marginal layer which will provide the cellular structure of the white matter. Neuroblasts originating in the mantle layer must pass through the marginal layer to reach the periphery of the hemispheres, where they develop into neurons of the cerebral cortex (Figure 3). Arrest of this migration leaves islands of gray matter in abnormal locations deep within the hemispheres. Migration of neuroblasts from the inferior portion of the lamina terminalis forms the optic nerves, while neuroblasts near the pituitary stalk migrate into the hypothalamic area to form the hypothalamic nuclei.

ASP associated with hypoplasia of the optic nerves was described by de Morsier[1] in 1956 and called "septo-optic dysplasia." This condition implies a developmental insult to the inferior portion of the lamina terminalis, with the more superior corpus callosum developing normally. Cells which should spread caudally from the marginal layer to form the septum pellucidum along with the developing corpus callosum (curved arrows, Figure 3) fail to do so. The adjacent developing neuroblasts are arrested in their migration to form the optic nerve.

Hoyt et al.[2] added hypopituitarism to the association of septal and optic dysplasia. CT features of this dysplastic triad have been recently described[3,4]. Flattening of the roof and inferior pointing of the floor of the lateral ventricles is seen on coronal scans in patients with ASP. Optic nerves are small. Dilation of the suprasellar and chiasmatic cisterns probably indicates hypothalamic dysgenesis. Diabetes insipidus is the most common pituitary disorder[3]. Patel et al.[5] reported agenesis of the posterior pituitary in an autopsy of a child with septo-optic dysplasia and hypopituitarism. Such cases may reflect a lamina terminalis insult preventing the migration of the marginal cells forming the posterior pituitary.

Anterior pituitary function may also be impaired in this condition despite the fact that the anterior lobe is derived from Rathke's pouch and may be anatomically intact. If hypothalamic nuclei do not receive neurons from the mantle layer, the secretion of releasing hormones is impaired. The result is hypofunction of the anterior pituitary due to anomalous development of hypothalamic gray matter.

Summary

In summary, an embryological insult to the lamina terminalis may be associated with a spectrum of developmental defects. Migration arrest of cells from the marginal layer may result in absence of the septum pellucidum and/or posterior pituitary. Failure of migration of neuroblasts from the mantle layer may lead to hypoplasia of the optic nerves and dysplastic development of hypothalamic nuclei manifested as hypopituitarism. Associated migration arrest of more superior cells in the mantle layer may deposit heterotopic gray matter subependymally near the lateral ventricles, as in this case, or within the centrum semiovale.

Taveras and Wood[6] reported the association of ASP with seizure activity. Mikhael and Mattar[7] reported four cases of heterotopia of cortical gray matter associated with mental retardation and intractable seizures starting early in life. The septum pellucidum was present in all. Surgical removal of the cerebral tissue containing the gray matter heterotopia resulted in complete relief, or significant reduction in the seizure activity in the three with unilateral changes.

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Experience with Microsurgical Reversal of Female Sterilization

DAVID L. HILL, M.D.*

The author's experience in 22 patients having microsurgical reversal tubal sterilization is reviewed. Fourteen (64%) had intrauterine pregnancies. Details of these cases are compared with the experience of others reported in the literature.

Since the mid-1970s, microsurgical techniques have been applied to female fertility problems and have virtually doubled the success rates in all categories. Winston[11] and Gomel[12] have done major pioneering work. They have taken information from their laboratories and applied it into a significant amount of clinical experience. Gomel[1] has published most extensively on specific methods.

Reversal of female sterilization is one of the most direct applications of microsurgical technique in gynecology. Several individuals have reported their experience in tubal reversal microsurgery as indicated in Figure 1. This report is a review of one individual's experience with microsurgical reversal of female sterilization.

Methods and Materials

From August, 1978 to August of 1984, twenty-two patients had a microsurgical reversal of a sterilization procedure. Each of these patients was interviewed with their spouse. Operative notes were reviewed. Ovulation was confirmed by basal body temperatures and sperm counts were evaluated. Preoperative laparoscopy was performed only when a unipolar cautery method had been the sterilization procedure as advocated by Henderson[8]. The results of laparoscopy were discussed with the patient before microsurgery was scheduled. Chances of success were related to the amount of tube remaining. All patients going this far in the evaluation elected to have the reversal procedure.

Reason for Reversal

The most frequent reason for reversal was the loss of a child (10/22), followed closely by a new partner (8/22). Other reasons were change of mind (3/22) and guilt (1/22).

Reason for Reversal

	IUP/Total Patients
Loss of child	6/10
New husband	6/8
Change of mind	2/3
Guilt	0/1

Figure 2

Age

The age range at the time of reversal was 25 years to 40 years, with an average age of 27 years.

Type of Tubal Sterilization

The most frequent procedure was the Pomeroy method in 15 patients, all but one performed postpartum. Two were by Falope rings, four by unipolar cautery, and one by a double burn Waters[13] technique.

Microsurgical Reversal of Female Sterilization

			Total Patients	*Intrauterine Pg*	*Ectopic Pg*
Gomel	Vancouver	1983	118	81%	1.7%
Seiler[2]	Cleveland	1983	73	64%	4.4%
Grunert[3]	Bethesda	1981	40	55%	2.5%
Wallach[4]	Philadelphia	1983	18	50%	10%
Diamond[5]	Nashville	1982	46	54%	0%
Rock[6]	Baltimore	1982	48	52%	8%
Rock[7]	Baltimore	1984	72	75%	7%
Henderson[8]	San Francisco	1984	102	63%	5%

Figure 1

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*Minneapolis, Minnesota.

Type of Sterilization Procedure

	IUP/Total Patients
Pomeroy	11/15
Cautery	
Unipolar	2/4
Waters	1/1
Falope ring	0/2

Figure 3

Time Since Sterilization

Time intervals from sterilization to microsurgical reversal range from three months to 12 years. The average interval was four years.

Sterilization to Reversal

Years	IUP/Total Patients
1	2/5
2	3/4
3	2/3
4	1/2
5	1/2
6	1/2
7	1/1
9	1/1
12	2/2

Figure 4

Microsurgical Technique

Basic techniques were used as described by Gomel[1] with some variation. All procedures were done with loupes*.[7] All anastomosis were performed with 7-0 Vicryl sutures. Sutures were placed intralumenally[8] numbering usually six. With disparity of size, interrupted sutures were placed on each side from the most mesial point, each gathering a little extra in the distal segment. That extra which remained was closed with interrupted stitches longitudinally to create a funnel effect. The anastomosis was tested for tight closure with a dilute solution of indigo carmine. The serosal layer was then closed with interrupted stitches. Irrigation of the pelvis was with Ringer's solution only. No intraperitoneal steroids, antibiotics, or high molecular weight substances were used.

Site of Anastomosis

All anastomosis were classified as to site of anastomosis. When there were differences in sites, the patient was classified with the site most surgically easy to perform. Isthmus to isthmus was the easiest (6/22), isthmus to ampulla the most common (14/22), and any cornual anastomosis the most difficult (2/22).

Site of Anastomosis

Site*		IUP/Total Patients
II	II	2/4
IA	IA	8/13
CI	CI	1/2
II	IA	1/1
IA	CA	1/1
II	CA	1/1

---

*I-Isthmus
A-Ampulla
C-Cornua

Figure 5

Length of Tube

Postoperative tubal length was measured. These lengths ranged from 2.5 centimeters to 7 centimeters, with an average of 5 centimeters.

Pathology of the Proximal Segment

Five patients were found to have abnormal proximal segments of the tube. All abnormal segments were removed and end to end anastomoses were performed.

Adjuvant Treatments

Prophylactic antibiotics were given as would be given to any laparotomy patient. No other adjuvant medications were given systemically or intraperitoneally. Hydrotubation was not performed.

Postoperative Hysterosalpingogram

All patients except one had a hysterosalpingogram at six to eight weeks postoperatively. One patient had unilateral spill, while all other patients were patent bilaterally. Patients were not recommended to protect against pregnancy postoperatively.

Postoperative Length of Tube

Longest Side	IUP/Total Patients
5-6 cms	12/17
4 cms	0/1
3 cms	1/3
2.5 cms	1/1

Figure 6

Postoperative Hysterosalpingogram

Bilateral patency	20/22	91%
Unilateral patency	Normal term pregnancy	
No HSG	Normal term pregnancy	

Figure 7

Results

Pregnancy

Intrauterine pregnancy occurred in 14 of the 22 patients. One patient had a stillborn infant in the last trimester. There were two early abortions. One of these patients subsequently delivered a term infant. There were no ectopic pregnancies.

Tubal Length

Silber[10] reported an importance of tubal length. His series had no success under three centimeters and 100% success over four centimeters. With preoperative laparoscopy, Seiler[2] excluded anyone with less than four centimeters of eventual tubal length. This series showed no such critical relationship. The patient with the shortest tubes (2.5 cm) delivered two term infants. Another patient with three centimeter tubes was successful.

Time Factors

Vasquez[9] reported the longer the time interval from sterilization to reversal, the less successful the procedure. This was not supported in this series. The three patients with the longest intervals (12 years, 12 years, nine years) have all delivered term pregnancies.

Of all patients who have conceived, all but one did so in less than one year. The longest interval was 14 months. The average time to first conception was six months.

Pathology in the Proximal Tube

Rock[6] reports a high incidence of pathologic findings in the proximal segments of the tubes, most particularly after cautery sterilization. This was supported in this series. Findings were salpingitis isthmican nodosa, hydrosalpinx, fibrosis, and endometriosis. These patients were all more than four years beyond their sterilization procedure, which agrees with Vasquez[9].

Postoperative Hysterosalpingogram

All patients except one had a hysterosalpingogram at six to eight weeks postoperatively. The patient who missed her Xray has delivered at term. One patient had patency unilaterally. She has also delivered at term. The remainder of the series have bilaterally patent tubes.

Age

There was no relationship to age and successful pregnancy. The older patients in this series had surprising success.

Review of Failures

A review of the unsuccessful patients reemphasizes the fact that many factors influence fertility. One patient is now 42 years old, another rarely ovulates, one husband has a subfertile sperm count, and one patient has been on oral contraceptives since her surgery. The patient who delivered a stillborn was Rh sensitized. One of the unipolar burn patients had considerable peritubal adhesions.

Comments

Microsurgical reanastomosis for reversal of female sterilization has been established as a very successful procedure. Age, length of tube, site of anastomosis, type of sterilization, time from sterilization, adjuvant treatments, loupes versis microscopies, all have been considered as to their relative merits in a successful reanastomosis. In this series when there was a choice of method, the least complex was chosen. The most basic consideration of reanastomosis was to respect the ability of the Fallopian tube to heal itself. No adjuvants were used, no hydrotubation. Success was comparable to that reported by others. In the hands of an experienced microsurgeon, the tubal factor can be restored to essentially normal if an adequate amount of Fallopian tube remains.

Time Reversal to Pregnancy

Months	*First Pregnancy*
2	1
3	2
4	3
5	1
6	4
8	1
9	1
14	1

Figure 8

Pregnancy Review

	22 total patients Patients	Percent
Intrauterine	14	64%
Normal term	12	55%
Abortion	2/14	14%
Stillborn	1/14	7%
Two normal term	3/14	21%
Ectopic	0	0%

Figure 9

References will be found on page 827.

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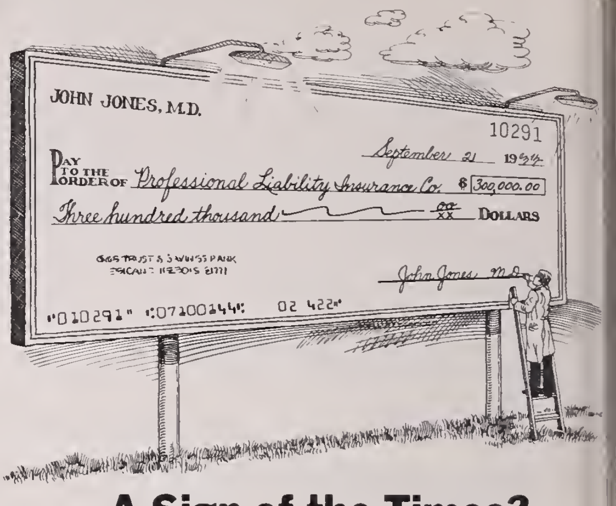
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Medical Malpractice Arbitration in Minnesota

GREGG ORWOLL* AND TIM GROSHENS+

About ten years ago, an experiment in medical malpractice claim resolution was launched in Minnesota. A plan called "An Experimental Arbitration Plan for Medical Liability Claims" was drafted by a subcommittee of the Minnesota Bar Association Legal Medical Committee. It was approved by the Bar Association Board of Governors and reviewed and approved by the Minnesota Medical Association.[1] When one reviews the amount of attention the plan has attracted and the limited use the plan has engendered, calling the inauguration of the plan a "launching" probably can be criticized as a gross overstatement or, at least, an exaggeration. The plan has scarcely cleared the ground.

The plan was publicized by both associations[2] and the first case was filed in September of 1975. Five cases had been filed by the end of the first full year of operation and three were filed the following year. Since that time, only six cases have been submitted, including one in each of the years 1982, 1983, and 1984. Of these fourteen cases, four resulted in awards to the plaintiffs, five in decisions for the defense, three cases have been closed on procedural grounds, such as private settlement or undue delay, and two remain open.

During the experimental period[3], the plan was to be limited to Hennepin and Ramsey counties, with the panels of potential arbiters coming from the seven county metropolitan area. Cases originating elsewhere in Minnesota, by consent of the parties, also may be submitted for arbitration under the plan.

Scope

Claims of negligence, breach of contract or breach of other professional duty against physicians, osteopaths, hospitals and other medical personnel allied with or employed by physicians and/or hospitals may be submitted for arbitration under this plan. If all parties agree, other consenting parties may be added.

A claim may be submitted either before or after the filing of a complaint in a civil action. The parties must agree to submit the matter to arbitration and agree to be bound by the decision of the arbiters. Where the possibility of multiple defendants exists, all must be named and they must agree to participate in and be bound by the arbitration. The claimant must agree that he has named all defendants and will not bring legal action against any other defendants concerning the same incident.

The plan contains provisions which allow the arbitration board (the three or five persons who actually serve as arbiters) to terminate an arbitration without prejudice if injustice occurs as a result of the filing requirements. The arbitration may be terminated at any time by agreement of all of the parties.

Filing

The parties must submit to the administrator[4] a request for arbitration signed by all parties. The claimant must agree to waive the medical privilege as provided for and limited by the Minnesota Rules of Civil Procedure. The signing of the request tolls the statute of limitations during the pendency of the arbitration proceeding.

Arbitration Board

The Medical Association and Bar Association each were to select a panel of not less than 30 physicians and lawyers to serve as potential arbiters.[5] Upon receipt of a request for arbitration, the administrator provides a list of three lawyers and three physicians to the parties. Each party strikes one of the physicians and one of the lawyers. The remaining lawyer and physician select a third arbiter who is neither a lawyer nor a physician. There also is a provision for the selection of a board of five arbiters if requested. Each arbiter is paid $150 for each hearing day, plus reasonable expenses. The chairman of the arbitration board[6] also is paid this per diem for conducting any pre-trial hearing. The parties share these costs plus the $25 filing fee.

Statement of Case

Within twenty (20) days following receipt of notice of the final selection of the arbitration board, the claimant must submit a written statement of his/her case and the amount claimed, which may not be increased thereafter.[7] The defendant then

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*General Counsel, Mayo Clinic, Rochester, Minnesota.
+Executive Director, Minnesota Bar Association, Minneapolis.

submits a written statement of his/her case within twenty (20) days of receipt of the claimant's statement. These statements are informal in nature, but they must set forth the pertinent facts and claims upon which responsibility or lack of responsibility is alleged, and must specify all injuries.

Hearing Procedures

In most cases, a typical civil suit type of prehearing conference is held. Discovery is the same as is permitted by the Rules of Civil Procedure and depositions may be taken and used in the same manner. Substantive provisions of Minnesota law apply if not inconsistent with plan provisions. Hearing procedures are those generally applicable to arbitration hearings.[8] The rules of evidence are to be liberally construed. The parties are urged to maintain confidentiality as to all proceedings and the files of the administrator are open only to the parties, their attorneys, and the arbiters.

Awards and Appeals

The arbiters issue written decisions including Findings of Fact and Conclusions of Law. The arbiters decide both the liability issues and award damages, if any. There is no limit to the amount of damages, other than the fact that they may not exceed the amount claimed in the statement of the case.

Any party to the proceeding may appeal the final decision of the panel as provided by Chapter 572 of the Minnesota Statutes.

Unusual Features of the Plan

Any party may ask the arbiters to recommend a medical consultant with expertise in the area in question. The supervising Medical Association Committee agreed to assist with such recommendations. This physician, who may charge an appropriate fee, will render medical advice pertaining to the merits of the claim. Reports of this consultant are privileged unless the party who consults the expert intends to call the consultant as a witness.

If the amount claimed does not exceed $15,000, the claimant may present his/her claim without expert medical testimony.

Conclusion

As indicated earlier, the plan has had little use. Why, has been a subject of considerable speculation. The authors were asked to prepare this article as a means of seeking comments from members of the Medical Association and others. It also was felt that the plan was little known or understood by lawyers, doctors, and hospitals. It was decided that information about the plan should be disseminated to those who might have an interest in it before any decisions concerning the future of the plan are made. Your comments are solicited on the accompanying form which includes a question concerning your interest in serving as an arbiter and solicits pertinent information about you and your practice, if you are so interested. The completed form should be directed to Kathleen Meyerle, Legal Counsel, Minnesota Medical Association, Suite 400, 2221 University Avenue, S.E., Minneapolis, MN 55414, tel. # (612) 378-1875. Questions about the plan or requests for arbitration should be addressed to Tim Groshens who acts for the Bar Association as the plan administrator at Suite 403, 430 Marquette Avenue, Minneapolis, MN 55401, tel. #(612) 333-1183, in-state 1-800-292-4152.

Footnotes

1. Shortly after the plan was adopted, the Minnesota Hospital Association apparently agreed to participate in the plan, then denied the authority of those who had so agreed, but subsequently joined as a sponsor. The plan was revised to accommodate this change, but no changes of substance were made.
2. 32 Bench & Bar No. 1, p.10 (July, 1975); Minnesota Medical Newspage, August, 1975, p.2.
3. No period of time was specified, but the Legal Medical Committee of the Bar Association and the designated Medical Association Committee were to oversee the plan and make recommendations concerning its future use.
4. The Bar Association was designated as the plan administrator.
5. Approximately 600 lawyers and 200 physicians submitted applications to be arbiters. 32 Bench & Bar No. 7, p.32 (January, 1976). From these applications, 140 lawyer arbiters and 96 medical arbiters were selected for the panel. 32 Bench & Bar No. 11, p.91 (May-June, 1976). The number of applicants for the panel appeared to indicate considerable interest in the plan.
6. The lawyer on the board serves in this capacity unless a majority of the arbiters vote to designate another member as chairman.
7. However, upon good cause shown, the board may permit the claimant to increase his/her demand, but if the amount of the claim as increased exceeds $15,000, the defendant(s) may withdraw consent to the arbitration.
8. Minn. Stat. §572 governs all matters not covered by the plan and the commercial arbitration rules of the American Arbitration Association apply to the proceedings if not in conflict with specific plan provisions.

Experimental Arbitration Plan for Medical Liability Claims

Your suggestions and comments concerning the arbitration plan.

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(attach separate sheet for additional comments.)

Please complete the following form if you are willing to serve as an arbiter. (Must practice in 7-county metropolitan area: Hennepin, Ramsey, Scott, Carver, Anoka, Dakota, Washington)

(Please type or print)

Name ____

Firm or Employer ____

Business Address ________________________________ Phone ________

Home Address __________________________________ Phone ________

Age ______ Number of years in practice ______________________________

Year of Minnesota Licensure ______ Type of Practice ______________________

____

Have you been involved as a defendant in medical professional liability claims or litigation?
Volume of such claims or litigation ____

Have you testified for plaintiffs or defendants in medical malpractice litigation?

______ Please give an indication of the number of times you have so testified for plaintiff.
For defendant ____

It is extremely important that the parties have complete confidence in their arbiters' impartiality. If there are any factors which may relate to your serving as an impartial arbiter, please disclose them, here and, if necessary, on a separate sheet:

____

____

Your willingness to serve as an arbiter under this plan is greatly appreciated. This form should be sent to: Kathleen Meyerle, Legal Counsel, Minnesota Medical Association, Suite 400, 2221 University Avenue S.E., Minneapolis, Minnesota 55414.

____
Signature

____
Date

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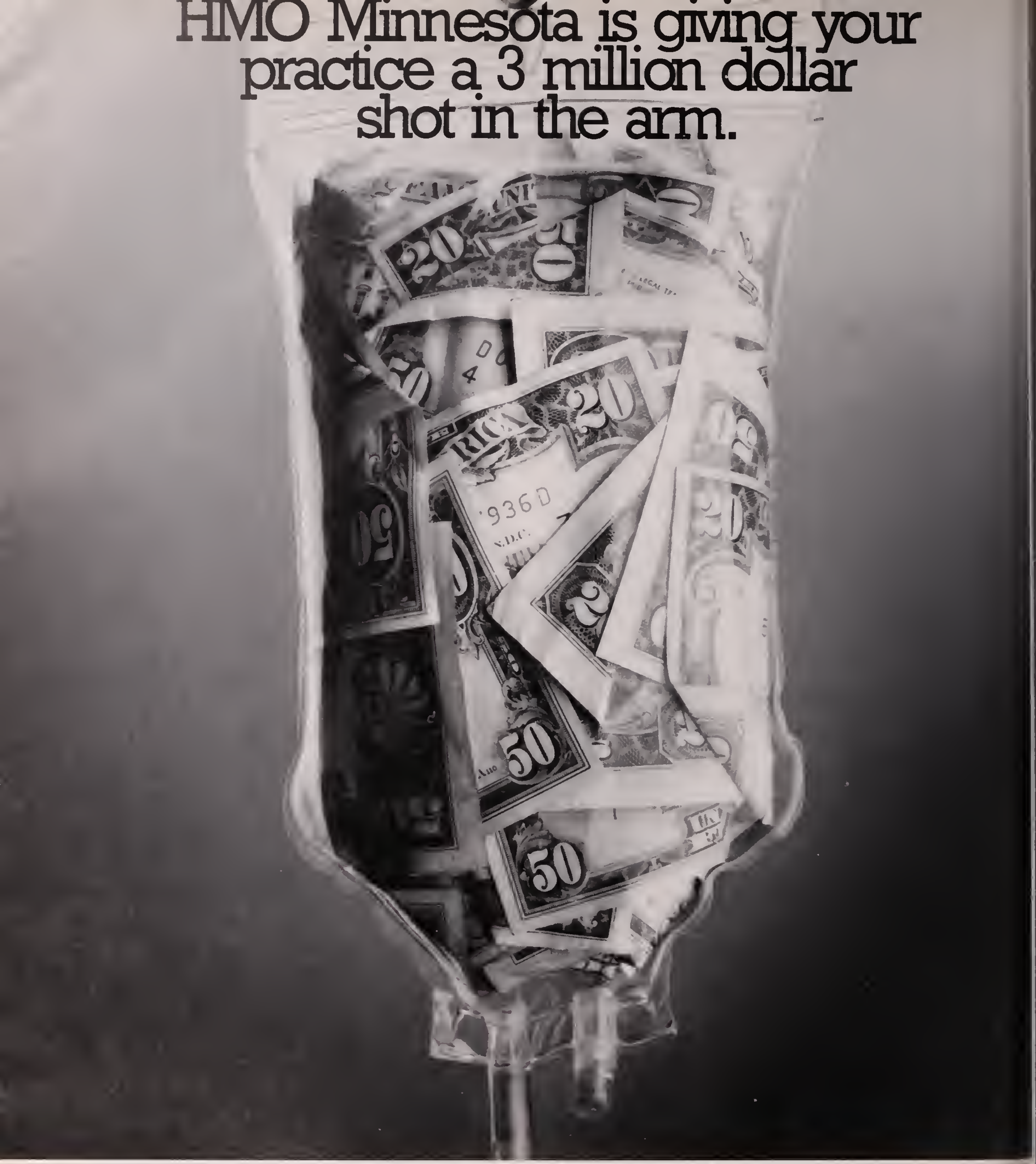

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Ethics Forum

The Ethics Committee of the MMA is sponsoring an *Ethics Forum* in Minnesota Medicine. The editorial by Dr. Donald C. Bell is the first of what we would like to be a continuing series of editorials on subjects in the broad area of medical ethics. Our purpose is to stimulate interest and enhance understanding in this area. We want anyone interested in writing an article to contribute. Please send your letters or articles to Carol Kaemmerer at the MMA office.

Problems of the "Disembodied Spirit of Morality"

On Carrying an Ethic to its Illogical Conclusion

DONALD C. BELL, M.D.

I find the study of the origin and history of words to be interesting and frequently helpful in trying to understand the nature of human affairs. Therefore, when it occurred to me the other day that the words "ethic" and "ether" may have a common background, I went to my dictionary and had my eye and my finger run down the "eth---" words to see what I could find out. There was "ether," generally pertaining to "spirit" and also "etherial" denoting a concept of "disembodied spirit." Next to my attention came "ethic," generally pertaining to a concept of "morality.*" As I thought about this for a moment or two, the concept of a "disembodied spirit of morality" occurred to me. Translated into more commonly used words, this pertains to the situation of how we commonly tend to follow an ethic to its *illogical* conclusions. In this context, I am using the word "ethic" to denote a thought system that concerns itself with the idea of right and wrong, not only in a religious sense (though that is very frequently a part of the consideration), but also with any general concept or idea around which we orient ourselves and govern our behavior.

An example may help make my point.

It is a perfectly natural thing for any person to have a love of self. Self esteem is a vital element for any person with a normal emotional makeup. Similarly, it also is quite natural to like, or hold in high regard, people who are similar to oneself, and it follows that there is a tendency for all of us to associate with people who are similar in race, nationality, religion, type of work or profession, interests, etc. This tendency would not come under the definition of an "ethic," but if one made this tendency to associate with likes a guiding principle of one's behavior and then proceeded to actively seek to exclude people who were different in any particular way, then this would indeed become an ethic (albeit a destructive and perverse one to most of our minds). There certainly is an element of this ethic in all of us, but for most of us, there are countering ethics or considerations that keep our prejudices (what we generally call this "ethic") in control and subservient to other ethical principles such as the principle of fairness, the concept of love for fellow mankind, or the fact that the stimulating experience of *different* associations makes life much more interesting.

We were all taught in school to "follow a thought to its logical conclusion" as a technique which would allow us to evaluate the consequences of our thinking. Ethics contain a combination of thinking and emotion. We *feel* about ethical matters much more than about intellectual matters. Because of this emotional element in an ethic, we are very apt to follow an ethic to its illogical conclusion. That is to say, our ethical concepts are apt to become etherial—to become "disembodied" as it were—to be divorced from all other reality.

A person whose prejudices became disembodied, or divorced from reality, of course, was Adolph Hitler. The concept that Germans were superior to others evolved in his mind to the concept of a "master race" and to the idea that people judged to be inferior should be eliminated. The resulting grotesque behavior needs no elaboration here.

My purpose in pursing this concept of the illogical extension of an ethical principle is to discuss the problems that the medical profession faces in taking care of people in the last phases of their lives, who may be regarded as terminally ill" (the quotes are intended to denote the frequent uncertainty of this term as applied to an individual case).

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*The Latin prefix "aeth" from which "ether" was derived seemed to differ from the Greek "eth" which the dictionary said was the origin of the prefix in "ethic." This seemed to shoot down my common origin theory, but the idea of a commonality of these words was planted in my mind so I decided to proceed, willy-nilly.

Virtually everyone in our society holds the concept that human life is sacred. Whether one derives this concept from the idea that we are created beings—and therefore have value in God's "eyes," or are more humanistic in our philosophy and derive the concept from innate human values, most of us agree on the sanctity of human life. Does that mean, however, that every moment of every life has value beyond all other considerations? Does the concept of the sanctity of human life center on its value to the person whose life it is, and therefore legitimately subject to being ended at the desire of the person or surrogate involved under certain circumstances? Or is it centered on societal considerations and its ending, therefore, subject only to legal opinions? Or theological considerations and, therefore, beyond all human considerations? Are cost factors a legitimate consideration in decision-making regarding maintaining a life? Are factors of pain or other suffering to be considered? I would not presume to have answers to these rhetorical questions. I am fully aware that many people are pondering the answers. Many excellent papers have been written and commissions have deliberated on these matters and have reported to government, press, and public.

The point that I wish to make here is that there are some people who are of the strongly-held opinion that human life is indeed valuable beyond all other considerations. These people are sometimes referred to as "vitalists." Some of them have seemingly allowed their concept of the value of life to become disassociated from other aspeects of reality and are labeled with the somewhat pejorative term "radical vitalists."

These people are organized, highly motivated, and very aggressive in promoting their concepts, sometimes with a religious fervor. Their organizations came into being with the abortion issue and, more recently, they have extended their activities to include the questions revolving around the care of the terminally ill and to people they judge to be vulnerable. They tour nursing homes, looking for examples of neglect. They are inevitably to be found at the legislature if matters of supportive care guidelines, definition of death, DNR policies, etc. are to be considered.

Of utmost importance for physicians, and the purpose of my writing this editorial, is to point out that these organizations are actively seeking cases to take doctors to court under criminal allegations—doctors who, in their opinion, have participated in the purposeful termination of life. Doctors in California have already been tried for murder (but acquitted), and more cases are likely to be brought, both locally and nationally. It should be pointed out that the person bringing the charges may not and probably will not be the family or friends of the patient, who probably concur with the concept of supportive care for their loved ones. Rather, these cases may be started on the way to prosecution by roommates of the patient, members of the nursing staff and even other doctors. I have received a copy of a letter from a group of doctors in our area who have written to the office of the attorney general recommending criminal prosecution of metro area physicians on one particular case.

The Committee on Ethics and Medical-Legal Affairs of the MMA is in the process of trying to develop guidelines for supportive care, for policies pertaining to the care of nursing home residents given by emergency personnel, and for development and implementation of DNR status in nursing homes. In this context, we are going to try to develop meaningful guidelines for certain clearly defined situations in which reduced levels of care may be deemed appropriate. It is our hope that this effort will have a positive impact on promoting good medical practice that will take into consideration all of the ethical, spiritual, emotional, medical and legal factors that bear on this difficult and complex subject. Traditionally, the policy of our profession has been that individual patient-family-physician judgments should be used. This certainly will continue to be the central theme of any meaningful guidelines, but at least two reasons exist to make this effort to establish guidelines valid. First, we have strong testimony indicating that some vulnerable adults are being medically neglected, and second, there are doctors who, having acted in good faith, used what they felt was sound medical judgment and followed the wishes of patient and family ordering withdrawal of some supportive treatment including withdrawal of artificially-given fluids and nutrients, are now being accused of a crime and may be prosecuted.

I end this piece by pleading to all doctors to incorporate the following practices when questions of instituting DNR orders or supportive care orders arise.

1. Record in detail the medical circumstances which justify the decision to institute DNR or other limited-care orders.

2. If at all possible, have the patient's own wishes regarding this decision recorded clearly, and witnessed by family.

3. Make a record of the discussion held with the family, noting their approval (if they don't approve, don't proceed).

4. Know the general legal requirements pertaining to these situations and follow the process used in the particular nursing home or hospital. Remember that the law is usually less concerned with the decision that you reach than it is with the process that you followed in reaching it.

5. Involve the nursing staff with this type of decision in cases that are obviously difficult. Remember that the allegation of murder in a California case was started by an angry nurse. A few minutes of reasoned exchange of views rather than shouted obscenities from one of the doctors would probably have saved the doctors a ruinous experience.

Each doctor who is potentially involved with this type of decision-making should remember that neither malpractice insurance nor any other type of insurance is applicable to this type of legal matter. You cannot insure against an allegation of crime. Our information is that the two doctors in California who were cleared of murder charges had legal fees of $750,000!! One can win in court and still be utterly ruined by the activities of these people and their disembodied ethics. We all are fed up with the increasing amount of harassment that we are subject to, but to just take the time to record the process through which we reach a limited care or DNR decision makes the best possible sense. It is practicing defensive medicine in the most effective (and cost effective) manner.

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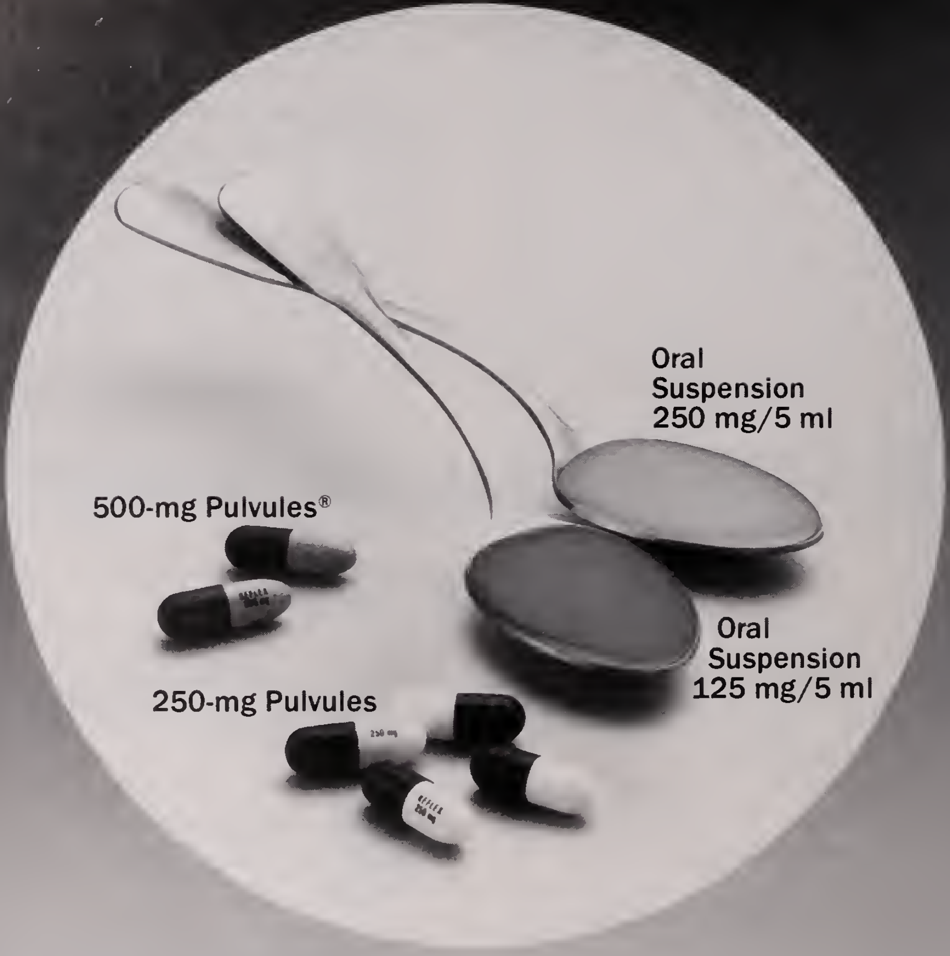

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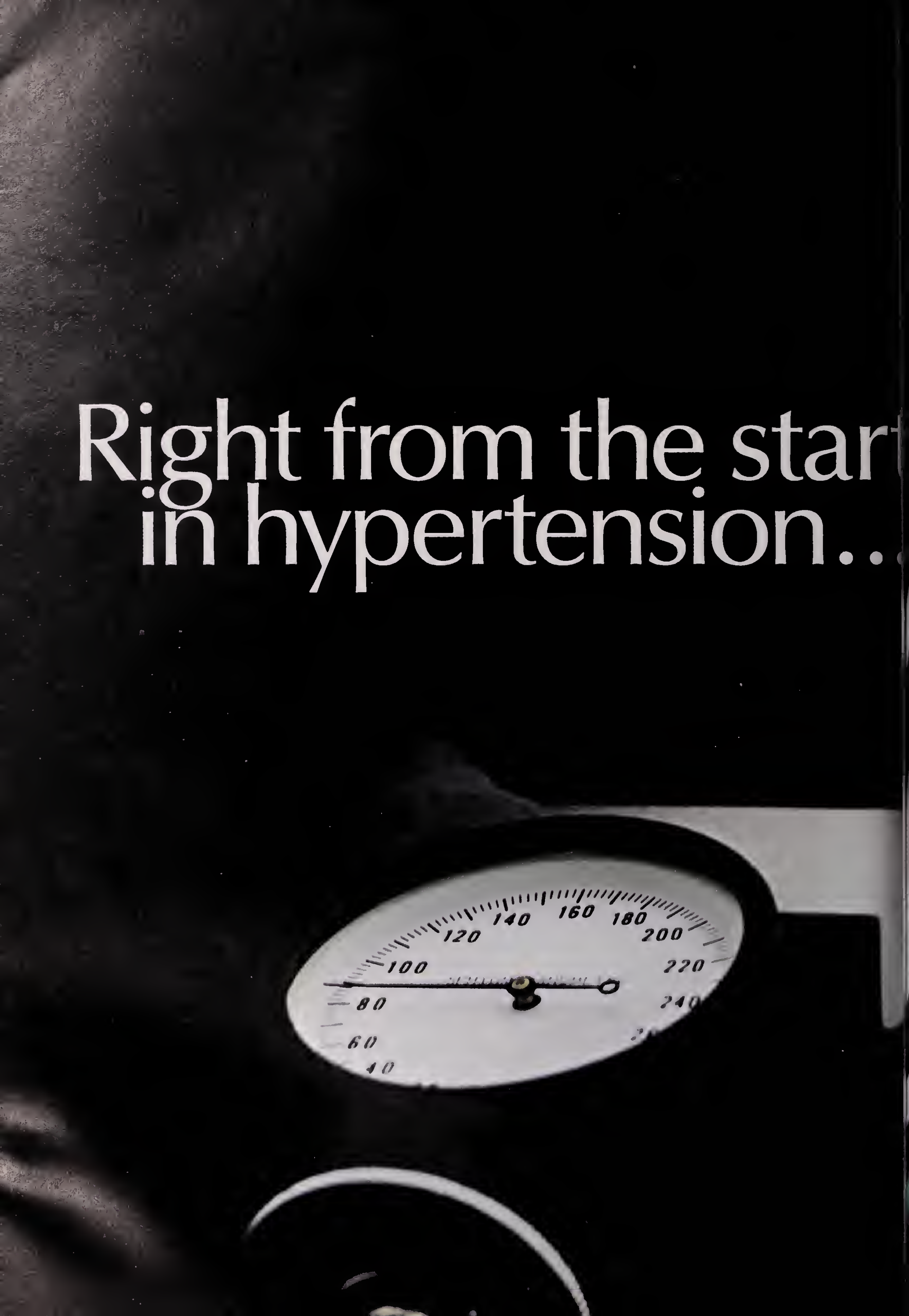

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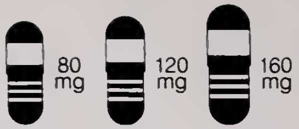

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INDERAL LA should not be considered a simple mg for mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose When changing to INDERAL LA from conventional propranolol. a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval. In most clinical settings. however. such as hypertension or angina where there is little correlation between plasma levels and clinical effect. INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate. systolic pressure and rate pressure product. INDERAL LA can provide effective beta blockade for a 24-hour period

The mechanism of the antihypertensive effect of INDERAL has not been established Among the factors that may be involved in contributing to the antihypertensive action are (1) decreased cardiac output. (2) inhibition of renin release by the kidneys. and (3) diminution of tonic sympathetic nerve outflow from vasomotor centers in the brain. Although total peripheral resistance may increase initially. it readjusts to or below the pretreatment level with chronic use Effects on plasma volume appear to be minor and somewhat variable INDERAL has been shown to cause a small increase in serum potassium concentration when used in the treatment of hypertensive patients.

In angina pectoris. propranolol generally reduces the oxygen requirement of the heart at any given level of effort by blocking the catecholamine-induced increases in the heart rate. systolic blood pressure. and the velocity and extent of myocardial contraction. Propranolol may increase oxygen requirements by increasing left ventricular fiber length. end diastolic pressure and systolic ejection period The net physiologic effect of beta-adrenergic blockade is usually advantageous and is manifested during exercise by delayed onset of pain and increased work capacity

In dosages greater than required for beta blockade. INDERAL also exerts a quinidine-like or anesthetic-like membrane action which affects the cardiac action potential The significance of the membrane action in the treatment of arrhythmias is uncertain.

The mechanism of the antimigraine effect of propranolol has not been established Beta-adrenergic receptors have been demonstrated in the pial vessels of the brain.

Beta receptor blockade can be useful in conditions in which. because of pathologic or functional changes. sympathetic activity is detrimental to the patient But there are also situations in which sympathetic stimulation is vital For example. in patients with severely damaged hearts. adequate ventricular function is maintained by virtue of sympathetic drive which should be preserved. In the presence of AV block. greater than first degree. beta blockade may prevent the necessary facilitating effect of sympathetic activity on conduction Beta blockade results in bronchial constriction by interfering with adrenergic bronchodilator activity which should be preserved in patients subject to bronchospasm.

Propranolol is not significantly dialyzable.

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension, it may be used alone or used in combination with other antihypertensive agents. particularly a thiazide diuretic. INDERAL LA is not indicated in the management of hypertensive emergencies

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris

Migraine: INDERAL LA is indicated for the prophylaxis of common migraine headache The efficacy of propranolol in the treatment of a migraine attack that has started has not been established and propranolol is not indicated for such use

Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis. especially for treatment of exertional or other stress-induced angina palpitations. and syncope. INDERAL LA also improves exercise performance The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation. Clinical improvement may be temporary

CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock. 2) sinus bradycardia and greater than first degree block. 3) bronchial asthma. 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL

WARNINGS. CARDIAC FAILURE Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure. and its inhibition by beta blockade may precipitate more severe failure Although beta blockers should be avoided in overt congestive heart failure. if necessary. they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE continued use of beta blockers can in some cases. lead to cardiac failure Therefore. at the first sign or symptom of heart failure. the patient should be digitalized and/or treated with diuretics. and the response observed closely. or INDERAL should be discontinued (gradually if possible)

> IN PATIENTS WITH ANGINA PECTORIS. there have been reports of exacerbation of angina and. in some cases. myocardial infarction. following abrupt discontinuance of INDERAL therapy Therefore. when discontinuance of INDERAL is planned the dosage should be gradually reduced over at least a few weeks. and the patient should be cautioned against interruption or cessation of therapy without the physician's advice If INDERAL therapy is interrupted and exacerbation of angina occurs. it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris Since coronary artery disease may be unrecognized. it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications

Nonallergic Bronchospasm (e.g., chronic bronchitis, emphysema)— PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors

MAJOR SURGERY The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial It should be noted. however that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures

INDERAL (propranolol HCl). like other beta blockers. is a competitive inhibitor of receptor agonists and its effects can be reversed by administration of such agents dobutamine or isoproterenol However. such patients may be subject to protracted s hypotension. Difficulty in starting and maintaining the heartbeat has also been reporte beta blockers

DIABETES AND HYPOGLYCEMIA Beta-adrenergic blockade may prevent th pearance of certain premonitory signs and symptoms (pulse rate and pressure chang acute hypoglycemia in labile insulin-dependent diabetes In these patients. it may be difficult to adjust the dosage of insulin

THYROTOXICOSIS Beta blockade may mask certain clinical signs of hyperthyroi Therefore. abrupt withdrawal of propranolol may be followed by an exacerbation of symp of hyperthyroidism. including thyroid storm Propranolol does not distort thyroid function

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME. several cases have reported in which. after propranolol. the tachycardia was replaced by a severe bradyc requiring a demand pacemaker. In one case this resulted after an initial dose of propranolol

PRECAUTIONS. *General.* Propranolol should be used with caution in patients with imp hepatic or renal function. INDERAL (propranolol HCl) is not indicated for the treatm hypertensive emergencies.

Beta adrenoreceptor blockade can cause reduction of intraocular pressure. Pa should be told that INDERAL may interfere with the glaucoma screening test Withdrawa lead to a return of increased intraocular pressure

Clinical Laboratory Tests Elevated blood urea levels in patients with severe heart dis elevated serum transaminase. alkaline phosphatase. lactate dehydrogenase

DRUG INTERACTIONS Patients receiving catecholamine-depleting drugs such as pine should be closely observed if INDERAL is administered The added catechola blocking action may produce an excessive reduction of resting sympathetic nervous a which may result in hypotension. marked bradycardia. vertigo. syncopal attacks. or ortho hypotension.

Carcinogenesis. Mutagenesis. Impairment of Fertility: Long-term studies in animals been conducted to evaluate toxic effects and carcinogenic potential In 18-month stud both rats and mice. employing doses up to 150 mg/kg/day. there was no evidence of signi drug-induced toxicity There were no drug-related tumorigenic effects at any of the do levels Reproductive studies in animals did not show any impairment of fertility tha attributable to the drug

Pregnancy Pregnancy Category C. INDERAL has been shown to be embryoto animal studies at doses about 10 times greater than the maximum recommended human

There are no adequate and well-controlled studies in pregnant women INDERAL s be used during pregnancy only if the potential benefit justifies the potential risk to the

Nursing Mothers: INDERAL is excreted in human milk. Caution should be exercised INDERAL is administered to a nursing woman

Pediatric Use: Safety and effectiveness in children have not been established

ADVERSE REACTIONS. Most adverse effects have been mild and transient and rarely required the withdrawal of therapy

Cardiovascular bradycardia. congestive heart failure. intensification of AV block. tension. paresthesia of hands. thrombocytopenic purpura. arterial insufficiency. usually Raynaud type

Central Nervous System lightheadedness; mental depression manifested by inso lassitude. weakness. fatigue; reversible mental depression progressing to catatonia. disturbances. hallucinations. an acute reversible syndrome characterized by disorientati time and place. short-term memory loss. emotional lability. slightly clouded sensorium decreased performance on neuropsychometrics

Gastrointestinal nausea. vomiting. epigastric distress. abdominal cramping. diar constipation. mesenteric arterial thrombosis. ischemic colitis.

Allergic: pharyngitis and agranulocytosis. erythematous rash. fever combined with a and sore throat. laryngospasm and respiratory distress

Respiratory: bronchospasm

Hematologic agranulocytosis. nonthrombocytopenic purpura. thrombocytop purpura

Auto-Immune In extremely rare instances. systemic lupus erythematosus has reported

Miscellaneous: alopecia. LE-like reactions. psoriasiform rashes. dry eyes. male tence. and Peyronie's disease have been reported rarely Oculomucocutaneous reac involving the skin. serous membranes and conjunctivae reported for a beta blocker (prac have not been associated with propranolol

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hydrochloride sustained-release capsule for administration once daily If patients are switched from INDE tablets to INDERAL LA capsules. care should be taken to assure that the desired therap effect is maintained INDERAL LA should not be considered a simple mg for mg substitu INDERAL INDERAL LA has different kinetics and produces lower blood levels Retitration be necessary especially to maintain effectiveness at the end of the 24-hour dosing inte

HYPERTENSION—*Dosage must be individualized* The usual initial dosage is 8 INDERAL LA once daily. whether used alone or added to a diuretic The dosage ma increased to 120 mg once daily or higher until adequate blood pressure control is achie The usual maintenance dosage is 120 to 160 mg once daily In some instances a dosage o mg may be required The time needed for full hypertensive response to a given dosa variable and may range from a few days to several weeks

ANGINA PECTORIS—*Dosage must be individualized* Starting with 80 mg INDERA once daily. dosage should be gradually increased at three to seven day intervals until opt response is obtained Although individual patients may respond at any dosage level average optimum dosage appears to be 160 mg once daily In angina pectoris the value safety of dosage exceeding 320 mg per day have not been established

If treatment is to be discontinued reduce dosage gradually over a period of a few (see WARNINGS)

MIGRAINE—*Dosage must be individualized* The initial oral dose is 80 mg INDERA once daily The usual effective dose range is 160-240 mg once daily The dosage ma increased gradually to achieve optimum migraine prophylaxis If a satisfactory response obtained within four to six weeks after reaching the maximum dose. INDERAL LA the should be discontinued It may be advisable to withdraw the drug gradually over a peri several weeks

HYPERTROPHIC SUBAORTIC STENOSIS—80-160 mg INDERAL LA once daily

PEDIATRIC DOSAGE—At this time the data on the use of the drug in this age group are limited to permit adequate directions for use

REFERENCES

1. Holland OB, Nixon JV, Kuhnert L: Diuretic-induced ventricular ectop activity. *Am J Med* 1981;70:762-768 **2.** Holme I, Helgeland A, Hjermann I, et al: Treatment of mild hypertension with diuretics. The importance of EC abnormalities in the Oslo study and in MRFIT. *JAMA* 1984;251:1298-129

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Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

NOVEMBER, 1985

21-22 Detection and Diagnosis of Substance Abuse in Patients; St. Paul-Ramsey Medical Center; Wilder Forest, Stillwater. CONTACT: Office of CME, (612) 221-3992.

22-23 Minnesota Chapter of American College of Physicians, Regional Meeting: Minnesota Chapter, ACP; Hyatt Regency Hotel, Minneapolis. CONTACT: A. Schultz, M.D., Governor for Minnesota Chapter, Hennepin County Medical Center, Minneapolis, Minnesota 55415; (612) 347-2700.

22-23 Laser Surgery with the Carbon Dioxide Laser; University of Minnesota; Radisson University Hotel; CONTACT: Office of CME, University of Minnesota, 420 Delaware Street SE, Minneapolis, Minnesota 55455; (612) 373-8012.

DECEMBER, 1985

-3 Basic Life Support Course (CPR) Certification/Recertification; ethodist Hospital, St. Louis Park; CONTACT: Lisa Collins, 6500 xcelsior Boulevard, St. Louis Park, Minnesota 55426 (612) 932-5189.

-4 Advanced Cardiac Life Support Course; North Memorial ledical Center; North Memorial, Robbinsdale, Minnesota; G. Patrick ilja, M.D., 3300 Oakdale North, Robbinsdale, Minnesota 55422 (612) 0-5535.

Pediatric Pulmonology: Relevant Concepts for Primary Practioners Minneapolis Children's Medical Center; Minneapolis. CONACT: Martha Rogers, Minneapolis Children's Medical Center, 2525 hicago Avenue South, Minneapolis, Minnesota 55404; 612/874-6895.

-7 Coronary Heart Disease; St. Paul-Ramsey Medical Center; eraton Midway Hotel; CONTACT; Ruth K. McIntyre, 630 Jackson reet, St. Paul, Minnesota 55101 (612) 221-3980.

Neonatal Resuscitation Course; North Memorial Medical Center, ME; North Memorial Medical Center, Robbinsdale, Minnesota; ONTACT: Peter Marshall, M.D.; 3300 Oakdale North, Robbinsdale, innesota 55422 (612) 520-5200.

-7 New Drugs and New Uses for Old Drugs; Park Nicollet edical Foundation; Radisson Inn Phymouth; CONTACT: Elaine nderson, 5000 West 39th Street, Minneapolis, Minnesota 55416 (612) 7-3703.

Eighteenth Annual Symposium on Obstetrics and Gynecology rth Memorial Medical Center, Minneapolis. CONTACT: Jon Niel, M.D., 3366 Oakdale North, Robbinsdale, Minnesota 55422. 612/ -5719.

7 Minnesota Obstetrical and Gynecological Society Fall Meeting Obstetrical and Gynecological Society; Hyatt Regency Hotel, Minneapolis. CONTACT: Thomas N. Julian, M.D., Box 395 Mayo Memorial Building, Minneapolis, Minnesota 55455. 612/373-4043.

JANUARY, 1986

17-18 Cardiology Update; Abbott Northwestern Hospital; Holiday Inn, Alexandria; Contact; Sarah Ventres, Education Department, Abbott Northwestern Hospital; 800 East 28th Street, Minneapolis, Minnesota 55407; (612) 874-4300.

27-31 Current Problems in Cardiovascular Disease Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Maui, HI; CONTACT: William Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

FEBRUARY, 1986

3-7 Dermatology Update Mayo Clinic/Mayo Foundation; Hyatt Orlando, Orlando, Florida. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

9-13 Clinical Anesthesia - State of the Art Mayo Clinic/Mayo Foundation; Iron Horse Resort Retreat, Winter Park, Colorado. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284/2085.

10-14 Postgraduate Course in Pulmonary Allergy and Infectious Disease; Mayo Clinic/Mayo Foundation; Buena Vista Palace Hotel, Florida; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, SW, Rochester, Minnesota 55905 (507) 284-2085.

16-21 Laryngectomee Rehabilitation Seminar Mayo Clinic/Mayo Foundation; Ala Moana Americana, Honolulu, HI. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

20-21 Current Concepts in Perinatal Medicine St. Paul-Ramsey Medical Center; Holiday Inn-Town Square, St. Paul. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/ 221-3980.

20-27 Euro-American Conference of Anesthesiology: Views for Today and Tomorrow Academic Hospital Affiliates; Kauai, Hawaii. CONTACT: Roy Cucchiara, M.D., 200 First Street Southwest, Rochester, Minnesota 55905. 507/285-5601.

24-28 Internal Medicine Meeting - Endocrinology/Nephrology/ Hypertension Mayo Clinic/Mayo Foundation; Hilton Beach and Tennis Club, San Diego, California. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

MARCH, 1986

3-7 Current Perspectives in Critical Care Medicine Mayo Clinic/ Mayo Foundation; Turtle Bay Hilton Country Club, Oahu, HI. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

5-8 Fourth Annual Critical Care Conference St. Paul-Ramsey Medical Center; Holiday Inn-Town Square, St. Paul. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/ 221-3980.

8-12 Electrodiagnosis of Neurologic Diseases Mayo Clinic/Mayo Foundation; Mayo Clinic, Rochester, Minnesota 55905. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55901. 507/284-2085.

10-12 Bone & Soft Tissue Tumors Mayo Clinic/Mayo Foundation; Del Coronado Hotel, San Diego, CA; CONTACT: William L. Nietz, Mayo Clinic 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

15-22 Symposium on Health Care for the Elderly; Minnesota Medical Association; Kauai Hilton, Kauai, HI. CONTACT: Eugenia C. Kassar, MMA, 2221 University Ave. S.E. - Suite 400, Minneapolis, MN 55414. 612/378-1875.

17-19 Urology Update Mayo Clinic/Mayo Foundation; Sawgrasss Resort, Ponte Vedra Beach, FL. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/ 284-2085.

21-22 Seventh Annual Update: Occupational Medicine. St. Paul-Ramsey Medical Center; Holiday Inn-Town Square. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

APRIL, 1986

5 Minnesota Society of Anesthesiologists Spring Scientific Meetin Minnesota Society of Anesthesiologists; Marriott, Bloomington, Mir nesota. CONTACT: Peter A. Southorn, MBBS, 200 First Stree Southwest, Rochester, Minnesota 55905. 507/286-8766.

10-11 Gynecology Update St. Paul-Ramsey Medical Cente Holiday Inn-Town Square, St. Paul, Minnesota. CONTACT: Rut McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221 3980.

11-12 9th Annual Update in Practical Cardiology Abbott Nort western Hospital, Abbott Northwestern Hospital. CONTACT: Sara Ventres, Ed. Dept., Abbott Northwestern Hospital, 800 E. 28th Stree Minneapolis, Minnesota 55407. 612/874-4300.

18 ENT Update St. Joseph's Hospital; 69 West Exchange Stree St. Paul, Minnesota. CONTACT: Ruth McIntyre, 640 Jackson Stree St. Paul, Minnesota 55101. 612/221-3980.

24-25 Pediatric Days Mayo Clinic/Mayo Foundation, May Clinic, Rochester, Minnesota. CONTACT: William L. Nietz, May Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507 284-2085.

April 28-May 2 Practice of Internal Medicine May Clinic, Mayo Foundation, Mayo Clinic, Rochester, Minnesota. CON TACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest Rochester, Minnesota 55905. 507/284-2085.

MAY, 1986

15 Changing Profiles in Clinical Toxicology. St. Paul-Ramse Medical Center, Hennepin County Medical Center, Minneapolis CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesot 55101. 612/221-3980.

July 31-August 2, 1986 Third Annual St. Paul Ramsey Trauma Conference; St. Paul-Ramsey Medical Center, Fo Hills Resort, Mishicot, WI: CONTACT: Ruth McIntyre, 640 Jackso Street, St. Paul, MN 55101; 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Sixth Annual Medical Ski Conference

"Diagnostic Dilemmas - The Approach and the Answsers" is the course to be held March 2-7, 1986, at the Keystone Lodge, Keystone, Colorado.

Sponsored by the University of Nebraska College of Medicine, and the registration fee is $300. This course is held in conjuction with the Dental Ski Conference and the Nursing Ski Conference.

Contact: Marge Adey, University of Nebraska Medical Center, Center for Continuing Education, 42nd and Dewey Avenue, Omaha, Nebraska 68105. Phone: (402) 559-4152.

Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400, Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

Ophthalmologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

Need Money? Eight family physicians and two primary care specialists needed over next four years, in rural Minnesota. Will consider you now. Educational funds and early sign up bonuses. We are not an agency!! Send name and brief resume to: Minnesota Medicine (765), 2221 University Avenue SE., Suite 400, Minneapolis, MN 55414.

Wanted: Family practitioner to join a 5 physician partnership in Litchfield, MN (a pleasant town of 6000 located 70 miles west of Minneapolis). If interested, please write or call collect at (612) 693-2804, Daniel A. Johnson, M.D., 35 E. 4th St., Litchfield, MN 55355.

Family practitioner for Mankato Clinic satellite office. Excellent group practice opportunity in all-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R. F. Roskens, Administrator or B. C. McGregor, M.D. (507) 625-1811.

Internist - East Range Clinics, Ltd. seeks an Internist with special interest in cardiology, pulmonary medicine or intensive care. Opportunity to enter established practice with progressive multispecialty group of 26 physicians including five Internists. Unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

Minnesota - Scenic Northern Minnesota town of 20,000 with a referral area of 35,000 seeks pediatrician to join multispecialty clinic. Challenging consultative and primary care pediatrics. Good benefits, early partnership, nationally recognized schools. Adjacent to national parks, ski areas, and lakes. Back up by board certified pediatrician/neonatologist available. Send curriculum vitae to John Brust, Mesaba Clinic, 1814 14th Avenue East, Hibbing, Minnesota 55746 or call Colleen Dinter, M.D., 218-262-4420 or 218-262-3441.

Pediatrics and family practice positions available with our clinic. We offer OB/Gyn, surgical and family practice specialists within our group. Located at the western tip of Lake Superior in northlands of Wisconsin, Superior offers an abundance of recreational activities — skiing, sailing, hunting — excellent education system and cultural activities. Send C/V to: Chairman, Recruitment Committee, 3500 Tower Avenue, Superior, Wisconsin 54880.

Family Physician - Join a progressive medical community in providing medical services to the Sebeka community in central Minnesota. Beautiful area, great community for raising family. Details, contact James G. Lawson, Administrator, Tri-County Hospital, Wadena, MN 56482, (218) 631-3510.

Suburban F.P. Group - SHARE affiliate - seeks associate to service rapid practice growth - competitive salary and benefits - unique opportunity to establish your practice - contact Gloria M. Vierling, Sundance Medical Clinics, LTD., 323 Naumkeag St., P.O. Box 9, Shakopee, MN 55379, (612) 445-6440.

FAMILY PRACTICE OPPORTUNITIES — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050.

FAMILY PHYSICIAN - Four man Family Practice group needs to replace two leaving partners. Board eligible or certified desired. One year salary with partnership thereafter. Would also consider longterm locum tenens. Small town in Central Minnesota Lakes area. Unopposed Family Practice Clinic, 150 bed Regional Hospital at Brainerd, 100 bed Nursing Home, rotate calls. Call or write C. R. Pelzl, M.D., Pine River Medical Clinic, Pine River, MN 56474. (218) 587-4416.

EAST RANGE CLINICS, LTD. seeks physicians in the following specialties: obstetrics/gynecology, orthopedic surgery, ophthalmology, and internal medicine (with interest in cardiology, intensive care, or pulmonary medicine). Opportunity to enter established practice with progressive multispecialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, Minnesota 55792. (218) 741-0150.

FAMILY PHYSICIAN needed to replace retiring partner in thriving 3-F.P. full service practice in Starbuck, Minnesota (home of the world's largest lefse) on the thirteenth largest lake in Minnesota. Modern eight-year-old hospital. Good hunting and fishing. Twenty miles from University campus. Call Dr. Bosl or Dr. Bucher at (612) 239-2231 for further information on this desirable practice opportunity.

GENERAL INTERNIST - Marshfield Clinic, one of the nation's largest multispecialty private groups, is seeking several Board certified/Board eligible General Internal Medicine specialists to join its expanding 16 member section. Internal Medicine Residency Program, University affiliation, Research Foundation, and large regional referral base contributes to a very stimulating environment. Unique big city medicine opportunity in a family oriented rural setting. Please send curriculum vitae to: John P. Folz, Assistant Director, Marshfield Clinic; 1000 North Oak Avenue, Marshfield, WI 54449 or call collect at (715) 387-5181.

PROFESSIONAL CORPORATION PENSION and profit sharing plans. Are you getting ready to amend your individually designed pension, profit sharing, 401(k) or cafeteria benefit plan to comply with the new federal laws: TEFRA, REA and DEFRA? Our firm provides legal assistance with plan amendments, design, forms and administration. We quote all fees in advance and for plan amendments, our fee quote covers one year of fees. Contact Roy B. Stromme, attorney, Poindexter Jacobson Stromme & Harwood, 2550 Multifoods Tower, Minneapolis, MN, 55402, (612) 340-0234.

STAFF PHYSICIAN -Willmar State Hospital, A JCAH accredited 642-bed hospital serving the mentally retarded, mentally ill, and chemically dependent, has a salaried position for a staff physician. Willmar is a growing city of 20,000 in the Minnesota lake country 90 miles west of Minneapolis/St. Paul. Excellent benefits, stable work environment, competitive salary commensurate with qualifications. Please send indication of interest to Lester E. Johnson, CEO, Willmar State Hospital, Box 1128, Willmar, Minnesota, 56201. Equal opportunity/ affirmative action employer.

PRIMARY CARE PHYSICIAN - opportunity for internist or family practitioner in north suburban area. Contact: Dr. Duane Orn, Northport Medical Center; 5415 Brooklyn Boulevard, Brooklyn Center, Minnesota 55429. 612-533-8666.

GROWING MULTI-SPECIALTY CLINC is looking for two Family Practitioners. One to staff a three-person Walk-in Department and the other to function in a traditional family practice setting located in north-central Wisconsin. New facility situated across the street from new hospital. Full partnership in two years. Easy access to lakes, woods and mountains. Write including CV to D.K. Aughenbaugh, M.D., Medical Director, Wausau Medical Center, 2727 Plaza Drive, Wausau, Wisconsin 54401.

FAMILY PHYSICIAN - Two physicians to join existing two physician group one hour from Minneapolis/ St. Paul. Generous first year salary guarantee with ownership possibility. Contact: W.S. Youngquist, 9500 Collegeview Road, #212, Minneapolis, Minnesota 55437.

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Gastroenterologist or Internist with subspecialty interest in gastroenterology (have all the equipment). Obstetrician/Gynecologist, General Surgeon, Internist, Family Practice in 18 physician multispecialty group located in ideal community of 26,000. Ninety minutes from Twin Cities, excellent schools, etc. The clinic is a modern, well equipped facility providing attractive guarantee and early partnership, plus other excellent benefits. Contact Richard W. Golly, Austin Medical Clinic, P.A., 101 N.W. 14th Street, Austin, MN 55912, (507) 433-7351.

Family Practitioner: BC/BE to join three board certified family physicians in a growing rural practice. Enjoy very competitive salary and benefits, excellent facilities and full privileges in adjacent city owned hospital. Contact Carl Melling, M.D., Melrose Clinic, P.A., 603 West Main Street, Melrose, MN 56352, (612) 256-4228 (office) or (612) 256-7227 (home).

Family Practice - Associate needed to join 4-man group, all ABFP, one member leaving soon due to health and family reasons. 65 miles North of Minneapolis, city of 2200. Trade area of 10,000. Excellent 40-bed hospital. Regular specialty consults at clinic and hospital, and all new diagnostic facilities available on site. Top school system and recreational activities. Contact Keith Clinic, P.A.; 160 SW Second Avenue; Milaca, Minnesota 56353, or call collect, (612) 983-6101.

Minnesota, Duluth: Emergency Medicine Physician wanted to fill vacancy in St. Luke's Hospital EMS Regional Trauma Center, with 19,000 annual ED volume. Fee-for-service corporation with negotiable first year salary and then full partnership. Prefer physician ABEM certified or eligible with interest in teaching in local ATLS, ACLS, and FP residency. Send CV to Physicians Emergency Service, Ltd.- 915 E. 1st St., Duluth, Minnesota, 55805. (218) 726-5212.

Psychiatrist to join progressive multi-specialty group of 61 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: John P. Merickel, M.D., 101 Willmar Avenue, Willmar, MN 56201.

Family Physician Or General Internist needed for an established primary care clinic of four Family Physicians and a General Surgeon. Guaranteed first year salary with benefit program. Located in a small town on the beautiful north shore of Lake Superior (service area population of 12,000) only 22 miles from Duluth which provides excellent referral and continuing education resources. Call collect (218) 834-2171 or write Steve Bjorum, Executive Director, Community Health Center, Inc., 4th Street at 11th Avenue, Two Harbors, MN 55616.

Canterbury inn bed & breakfast — Rochester's unique alternative to hotel living. Victorian charm with modern comforts. Private baths, fireplace, central air conditioning, gourmet or special diet breakfast anytime, "teatime" (wine, hors d'oeuvres, etc.) daily. Private, offstreet parking, 3 blocks to Mayo Clinic and St. Mary's. A very special place for you, your colleagues, and your patients while in Rochester. $50/single, $60/dbl. 723 2nd. St. S.W., Rochester, MN 55902 (507) 289-5553.

Ob/gyn, and internal medicine Board Certified or Eligible, to join eight doctor clinic in Cloquet, Minnesota, a community of 12,000 (30,000 service area) located 20 minutes from Duluth — Superior. Clinic facility is located one block from modern, well equipped hospital. Cloquet enjoys a stable economy (forest products). Additionally, our community is noted for its excellent school system. First year salary guaranteed, paid malpractice, health and disability insurance, vacation and study time. Contact John Turonie, Administrator, Raiter Clinic, Ltd., 417 Skyline Boulevard, Cloquet, Mn. 55720. Telephone 218-879-1271.

Family Physician BC/BEto join solo practitioner in Southwest Metro Area. Guaranteed salary plus fringe benefit package. Contact Samuel C. Shield (C1549), Minnesota Medical Service Corporation, 2221 University Avenue S.E., Suite 400, Minneapolis, MN 55414.

Office space for rent: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

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MINNEAPOLIS AND SUBURBAN practice of 10 family physicians seeks eleventh Board Certified or eligible family physician to join group or locum tenens. Major hospital affiliation, three practice sites. Direct inquiries to Dr. Youmans or Mr. Nickolay, 1206-42nd Avenue North, Minneapolis, MN 55412, (612) 522-6601.

TWELVE-PHYSICIAN multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

SOUTH CENTRAL MINNESOTA PRACTICE Association. Group Professional Corporation has opening for OB/GYN physician. Service area of 65,000, fee-for-service; considering prepaid availability. Excellent benefits and earnings. Profit sharing and 401(K) plans. Fine residential living in outstanding small city of 20,000, ninety minutes from Minneapolis/St. Paul. First class facilities and hospital, challenging medical practice. Contact: Albert Lea Regional Medical Group, P.A.; B.J. Boss, Associate Administrator or William Brouwer, Administrator; 1602 Fountain Street, Albert Lea, Minnesota 56007. (507) 373-8251.

FAMILY PHYSICIAN needed to join a young physician in a rapidly growing practice, located in a new clinic that is attached to the Hospital and C&NC Unit. Guaranteed salary plus incentive first year, partnership offered second year. Located within half hour drive of many excellent fishing and resort lakes and state forest which offers excellent outdoor recreation. For more information contact Wallace M. Eid, Administrator, Mahnomen County & Village Hospital and Nursing Center, Mahnomen, MN 56557, (218) 935-2511.

SOUTH CENTRAL MINNESOTA PRACTICE Association. Group Professional Corporation has opening for an ENT physician. Service area of 65,000, fee-for-service; considering prepaid availability. Excellent benefits and earnings. Profit sharing and 401(K) plans. Fine residential living in outstanding small city of 20,000, ninety minutes from Minneapolis-St. Paul. First class facilities and hospital, challenging medical practice. Contact: Albert Lea Regional Medical Group, P.A.; B.J. Boss, Associate Administrator or William Brouwer, Administrator; 1602 Fountain Street, Albert Lea, Minnesota 56007. (507) 373-8251.

INTERNIST, BOARD CERTIFIED or board eligible, for full-time faculty position with University-affiliated 220-bed general hospital educational program. Supervising residents on internal medicine ratations. Position carries faculty appointment with major Midwestern medical school. Competitive salary with attractive fring benefits. Call or write: John Hess, M.D., Medical Director, Broadlawns Medical Center, 18th and Hickman, Des Moines, Iowa 50314. Telephone (515) 282-2275. An affirmative action, equal opportunity employer.

FAMILY PRACTICE - Northridge Family Medicine Clinic, P.A. is looking for a fourth BE/BC F.P. to practice in our new clinic facilities in Mankato. Contact Tony Giefer, M.D.; 1695 LorRay Drive, North Mankato, MN 56001 or call 507-345-5293.

WANTED: FAMILY PRACTITIONER, OB/GYN. Group practice. Central Minnesota. Starting salary $45,000. Write Minnesota Medicine (755), 2221 University Ave. S.E., #400, Minneapolis, MN 55414.

INTERNIST Wanted to join a 17 physician multispecialty group in Robbinsdale, Minnesota. Located next to the North Memorial Medical Center. Excellent group practice opportunity, full range of group fringe benefits. Clinic also has two additional satellite offices located in Maple Grove and Osseo. Clinic also is a provider for SHARE HMO, and soon to return as a provider for Physicians Health Plan HMO. Please contact the administrator at North Clinic, P.A., 3210 Lowry Avenue North, Robbinsdale, Minnesota 55422. Telephone 612-588-4625.

SOUTH CENTRAL MINNESOTA PRACTICE Association. Group Professional Corporation has opening for an Orthopedic physician. Service area of 65,000, fee-for-service; considering prepaid availability. Excellent benefits and earnings. Profit sharing and 401(K) plans. Fine residential living in outstanding small city of 20,000, ninety minutes from Minneapolis-St. Paul. First class facilities and hospital, challenging medical practice. Contact: Albert Lea Regional Medical Group, P.A.; B.J. Boss, Associate Administrator or William Brouwer, Administrator; 1602 Fountain Street; Albert Lea, Minnesota 56007. (507) 373-8251.

FOR SALE Burdick treadmill, Marquette 3-channel EKG, Monitor, etc. 612-237-2262 evenings.

The Bemidji Clinic is a 22-doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Recruiting for Board Certified or Board Eligible Family Practitioners to expand our Family Practice Department and offer opportunity of branch office practice. Contact C.C. Lowery, Clinic Administrator, at (218) 751-1280, home (218) 751-9718 or Jerry Thompson, M.D. (218) 751-1280, Home (218) 751-9437.

Rare Opportunity for an aggressive, well-trained internist to practice consultative, general internal medicine. The practice opportunity exists in a service area of 30,000 in scenic Northern Minnesota. Skills would have to include the ability to handle critically ill patients as well as supervise chronic dialysis unit and respiratory care. Join a progressive multispecialty clinic which provides ample financial rewards. Please send your curriculum vitae to: John Brust, Mesaba Clinic; 1814 14th Avenue East; Hibbing, Minnesota 55746. No phone calls please.

Internist - Nephrologist - Internist - Oncologist - sought for multispecialty group practice in Northern Minnesota. New 175 bed hospital with dialysis unit, full diagnostic services and support facilities. Nationally acclaimed school system and broad range of recreational facilities. Excellent opportunity for aggressive internist. Liberal compensation system. Excellent fringes. Telephone calls will not be accepted. Send curriculum vitae to: John Brust; Mesaba Clinic; 1814 14th Avenue East; Hibbing, Minnesota 55746.

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Opening for M.D, interested in Occupational Medicine. Established clinic in Minneapolis-St. Paul Location. Phone: 379 7246.

General Internist would like to assume/purchase practice in Twin Cities Metro Area. Will also consider Group/Partnership arrangement. Write: Minnesota Medicine (767) 2221 University Avenue Southeast, Minneapolis, Minnesota 55414.

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South Central Minnesota Practice Association. Group Professional Corporation has opening for Dermatology physician. Service area of 65,000, fee-for-service; considering prepaid availability. Excellent benefits and earnings. Profit sharing and 401(K) plans. Fine residential living in outstanding small city of 20,000, ninety minutes from Minneapolis-St. Paul. First class facilities and hospital, challenging medical practice. Contact: Albert Lea Regional Medical Group, P.A.; B.J. Boss, Associate Administrator or William Brouwer, Administrator, 1602 Fountain Street, Albert Lea, Minnesota 56007. (507) 373-8251.

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Fellowship in Alcohol-Drug Dependence 1 year, G-4 or G-5 level, University of Minnesota. Contact: Dr. Joseph Westermeyer, Box 393 Mayo Building, University of Minnesota Hospitals, Minneapolis, Minnesota 55455, for further information. Telephone: 612-373-7952.

United Hospital, St. Paul Minnesota is looking for a part-time Medical Director of Mental Health Programs. Applicants should be board eligible in Psychiatry. Please send resumes or inquiries to: Leta Thornton, Vice President, Administration, United Hospital, 333 North Smith Avenue, St. Paul, Minnesota 55102.

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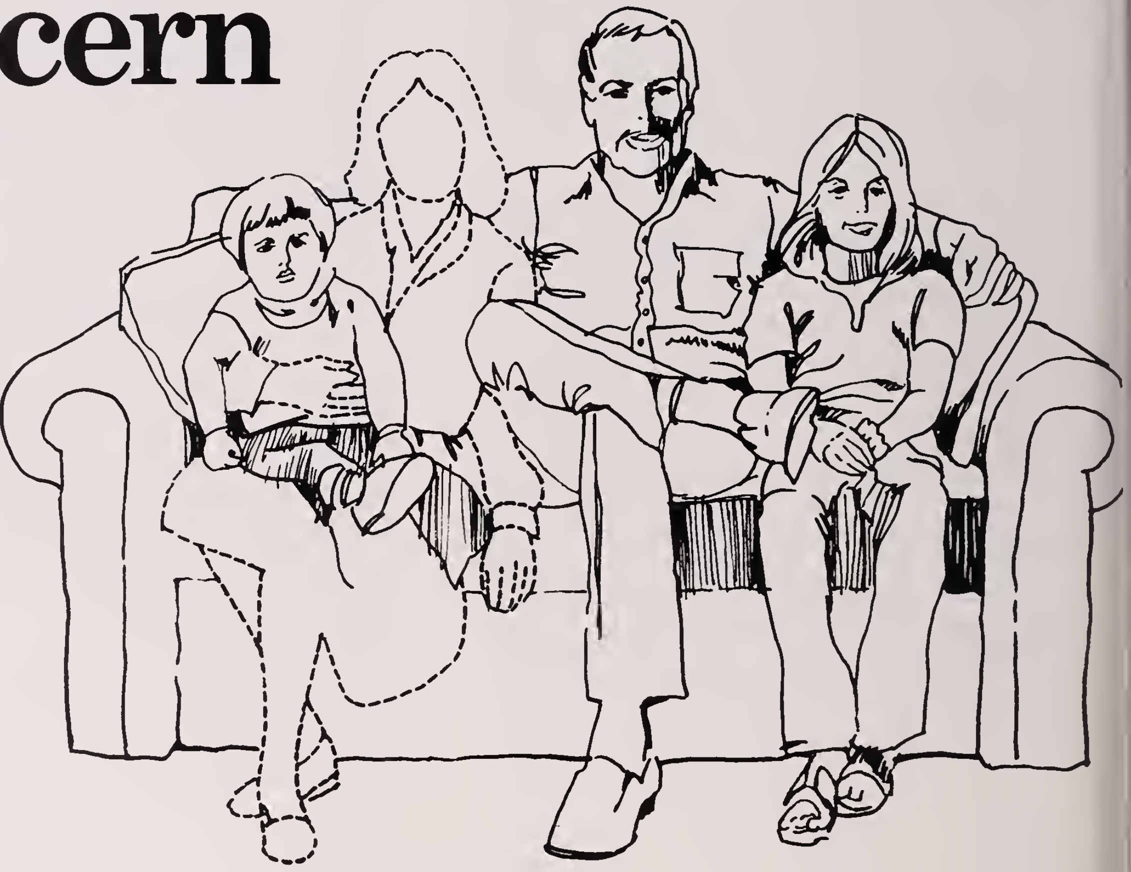

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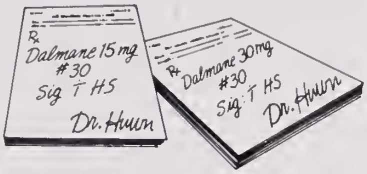

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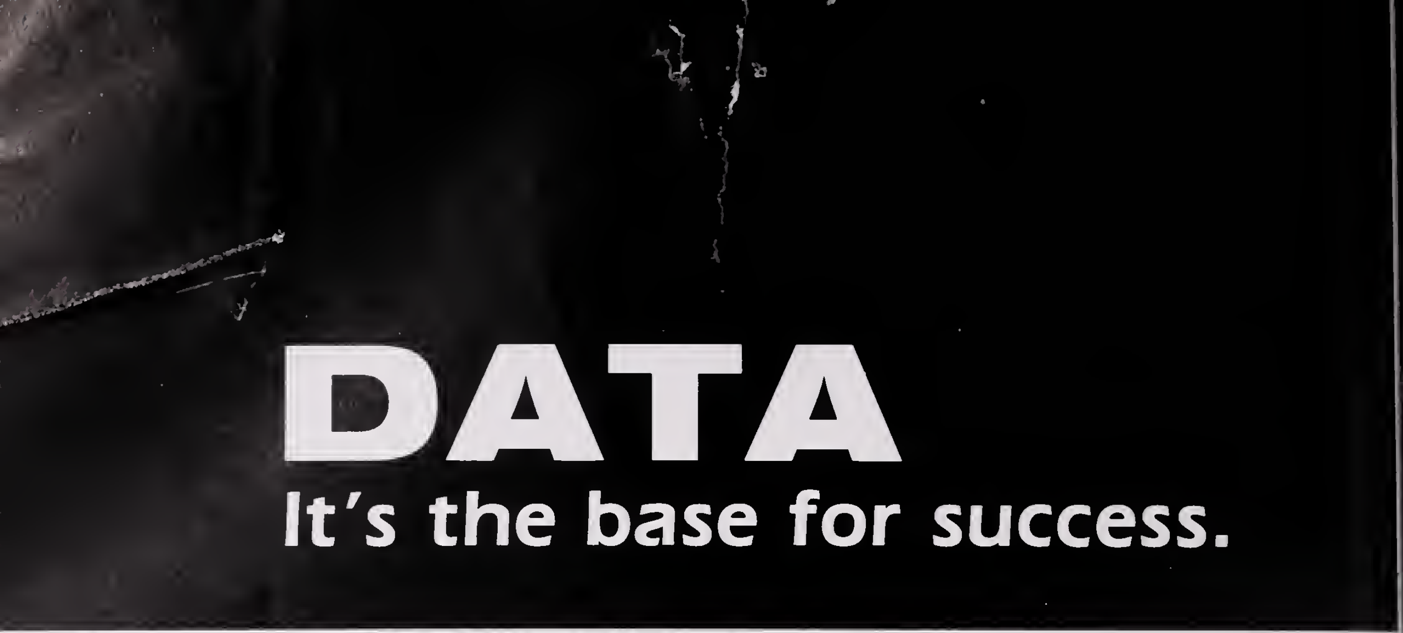

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President's Letter

United We Stand

Peggy Craig

M. Elizabeth Craig, M.D.
President
Minnesota Medical Association

As your president, I attended the AMA December interim meeting in Washington D.C. where the Minnesota delegation represented your interests in medicine's democratic process. Since not all physicians can attend, and since some of our MMA members do not recognize the desirability—yes, the necessity of belonging to the National Organization functioning in our behalf and fighting for our welfare in today's difficult medical care climate, a review of some of the issues addressed and my perspective seems appropriate.

As they do twice a year, the various sections of the AMA brought resolutions to the House of Delegates. These resolutions were discussed and evaluated in reference committees before being considered on the floor of the House. One hundred twenty resolutions were addressed at this meeting reflecting the particular interests of the delegations.

State delegation caucuses brought resolutions addressing problems with Medicare, Medicaid, third-party payors, development of health plans, government and legislative mandates, plus more specific health issues. The two-year-old Hospital Medical Staff Section's concerns dealt primarily with hospital credentialling, by-law revision, exclusive contracts with hospitals and health plans, professional liability, and confidentiality of peer review activities. The Student and Resident Sections understandably presented resolutions dealing with their future—graduate medical education, availability of training programs, and public health issues. Specialty society resolutions dealt with the more selective concerns of their particular perspective.

All resolutions were thoroughly, sometimes tediously, considered in a true democratic forum with the will of the majority prevailing. Good results were achieved. It was a productive meeting.

Certain activities of every AMA meeting attract public attention. At this session, it was the passage of the resolutions regarding banning of tobacco advertising and those of AIDS control which attracted the media. Many more important decisions affecting your interests, such as: Medicare and Medicaid reimbursement, medical staff autonomy, professional liability, joint ventures, and recoverability of peer review committee deliberations were addressed without media interest.

The full report of actions of the House should be of vital interest to each physician and will be available after the first of the year.

Sitting in the House of Delegates at our national meeting and listening to the deliberations of that House, one realizes how complex are the demands of our profession. I cannot think of a concern of medical practice and of physicians that has not been addressed by the AMA.

The AMA has been accused of being a club of "good old boys" whose purpose was to maintain the status quo of medicine. How wrong that belief is! The AMA daily addresses myriad issues vital to our future in every aspect of medical practice. Daily they communicate with congressmen.

As with any organization lobbying and dealing with congressional legislators, the AMA doesn't always achieve its desired results. But, believe me, we have the respectful ear and attention of those elected people making the laws that regulate our profession. AMA representatives are welcome on capitol hill, and work diligently for you, taking direction from the House of Delegates.

Every physician, whatever his/her source of income, needs to belong to a local, state and national organization in order to voice his/her will and benefit from the deliberations at each level. Seventy-five percent of Minnesota physicians recognize this responsibility. Twenty-five percent ride on the efforts of those of us who pay our dues and work at the national level.

The AMA needs your involvement, but, more important, you need the AMA's organizational structure working in your behalf. I solicit all of you who have not unified in membership at all levels—local, state, national—to respond to the need and duty of joining the AMA. In today's medical world, no one can go it alone.

KUOM-Who Controls Health Care

On January 15th, KUOM, 770 AM, University Public Radio, is beginning a series of hour long programs every Wednesday at 1:30 p.m. to discuss health care issues and answer phoned in questions from listeners. The first guest on *January 15th* will be Harry Sutton, vice president of Towers, Perrin, Forster and Crosby, international consultants to Blue Cross/Blue Shield. On *January 22nd* at 1:30 the guest will be Gus Donhowe, executive vice president and chief operations officer of Fairview Community Hospitals. On *January 29th* the guest will be Richard L. Reece, M.D., editor-in-chief of *Minnesota Medicine*. Have your questions ready. The phone number for Twin Cities metro listeners is 373-5000; for outstate listeners 1-800-247-0785; listeners in Iowa and Wisconsin may call collect at 1-612-373-5000.

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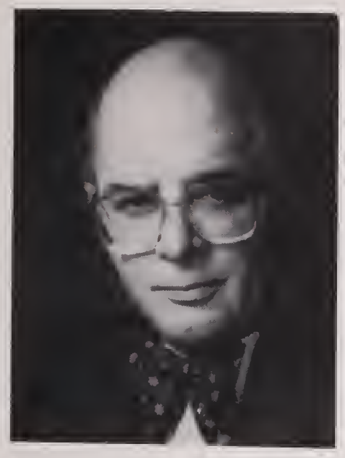

Editor's Notebook

tis the season to be jolly

dear doctors
just because i m a cockroach
and not a member of the human race
you doctors dont appreciate me
as a true artist with words
expression is the need of my soul
and writing is the want of my heart
little do you know that i
am transmigrated from
william shakespeare and that
i speak with a golden tongue
i can do anything with words

i
can
sketch
christmas
trees with these
witty words of mine
right in front of your nose
all
the
way
to
the
bottom stand

i have a versatile pen
i can use short words
not those four letter ones that shock
but small words that are brief crisp and terse
words that go straight to the point
like a knife with a charm all their own words
that dance and twist and turn and sing
there is not much small words will not say

i can reel off the biggies too
honorificabilitudinitatibus
antidisestablishmentarianism
supercalifragilisticexpialidocious
and here are a few for you doctor types
encephalomyeloraddiculoneuritis
hepatocholangiocystoduodenostomy
pneumonoultramicroscopicsilicovolcanoconiosis
and for the welsh editor of minnesota medicine
here is the longest word on record
a fifty-eight word welsh place name
llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogoch

what i like the best are short puns
a pun differs from a barnyard smell
in that a pun is a shift of wit
which reminds me that puns work best
when you are full of animal spirits
for example try this poem on for size

no sweet girl ewe ever gnu
than my little daughter sue
with sable hare small tapir waist
and lips youd gopher miles to taste
deer girl i loved her as my life
and vowed to heifer for my wife

enough of that
i dont want to cow you
with my verse

puns are good for fish stories too
like the tale of the brilliant sturgeon
on the staff of the local fishery hospital
of which he was one of the flounders
wiser than salmon a fin fellow
who would never shrimp from responsibility
he was successful and happy
he always whistled a happy tuna
one day a patient a mere whipper snapper
told the surgeon he was full of abalone
and started trouting around saying
the sturgeon had made him eel and he
conched him with a malpractice suit
now the sturgeon was in a big pickerel
the hospital demanded his oyster
but the case smelt to high heaven

i could go on
but its snowing outside
and by now

you
surely
have
the
drift
of
this
xmas
tail
but
now
it
is
out
of
hand
this
may
be
a
case
of
the
tail
waving
the
wag

minny

ps the boss said
before he would allow
a cockroach to write
i would have to
bring references
so here
they are

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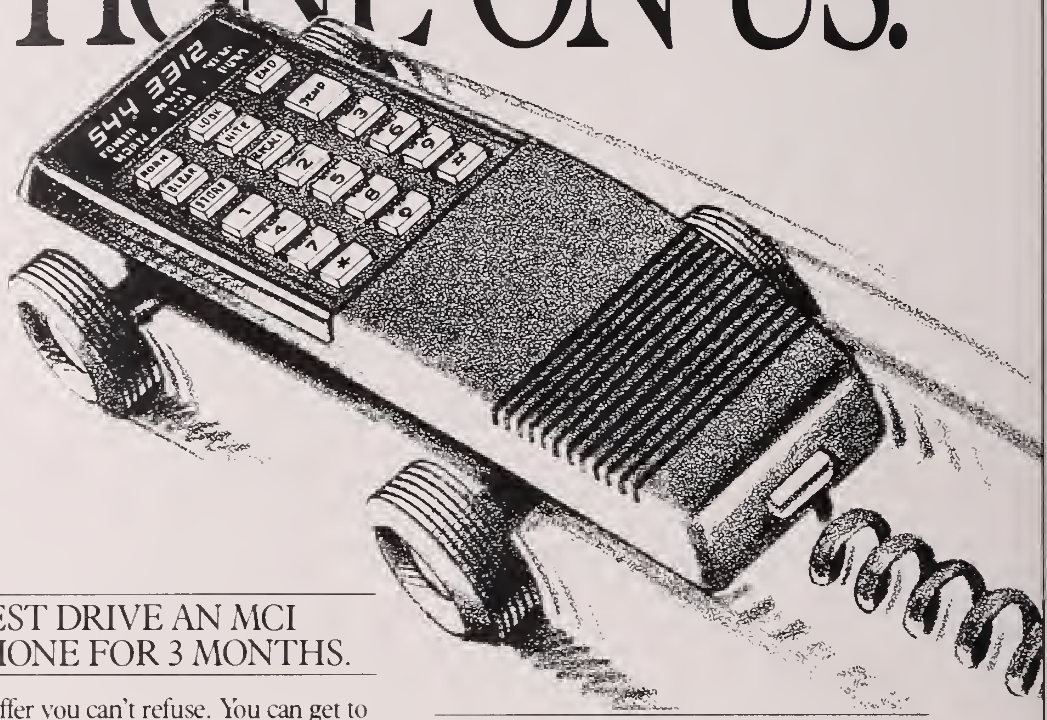

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A New Method of Dilating Post-Anastomotic Strictures in Babies which does not require Anesthesia

D. NEIL DICKSON, M.D.*
and DAVID W. TODD, M.D., F.A.C.S.*

Esophageal strictures may result from anastomoses that leak, usually associated with an "under-tension" anastomosis. A technique is described for dilating the stricture on an outpatient basis without anesthesia and resulting in minimal distress for the baby. This is accomplished with the angioplasty balloon catheter technique.

Esophageal atresia without tracheoesophageal fistula comprises approximately 8% of all forms of esophageal atresia.[1] This type of esophageal atresia usually has a shortened distal esophageal segment, which results in there being a "long-gap" between the two esophageal pouches.[2] This "long-gap" requires a different therapeutic approach and several methods have been developed to treat this condition.[3] These methods include: (1) gastrostomy feeding until the infant is approximately eight weeks old, before attempting esophageal anastomosis in order to allow time for growth of the esophagus, (2) elongation of the upper and lower pouches with dilators, (3) circular myotomies, (4) esophageal reconstruction.

Even though end-to-end esophageal anastomosis done under tension increases the chances of complications, such as anastomotic leakage, authorities agree that, if at all possible, it is best to accomplish the anastomosis.[1] If end-to-end anastomosis is impossible (unusual), it is then necessary to proceed to cervical esophagostomy and later to esophageal reconstruction.

Since esophageal atresia without tracheoesophageal fistula usually has a "long-gap," and therefore will require an anastomosis under tension, the complication of anastomotic leak is not infrequent. This may present as a small or large pseudodiverticulum on barium swallow. These leaks, even with an esophagocutaneous fistula, will usually close spontaneously if the area is kept drained and "at rest."[2]

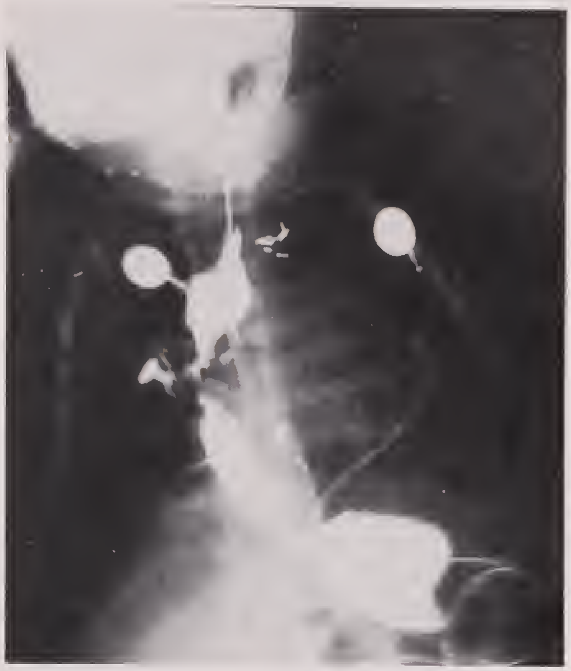

Fig. 1 - Stricture of mid-esophagus.

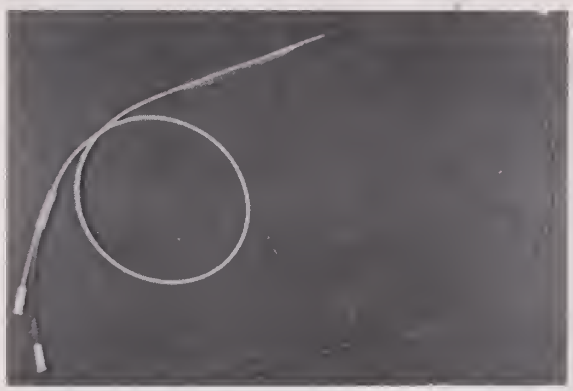

Fig. 2 - Angioplasty balloon catheter and guide wire.

As the area of leakage heals, a stricture or narrowed area associated with impaired swallowing may be created.[4] A therapeutic intervention for this type of stricture is the subject that is addressed in this paper.

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Methods and Materials

The procedure described may be performed on an outpatient basis. It is applicable for patients with a gastrostomy. There is no need for anesthesia, as the patient experiences minimal discomfort.

Under fluoroscopy, a Linderquist wire is passed through the gastrostomy site upwards through the esophageal stricture to the proximal esophagus. An 8 mm angioplasty balloon catheter is then passed over the wire and then distended with a dilute barium solution.[5, 6] This allows observation under fluoroscopic control with dilatation of the stricture being accomplished in one step. If further dilatation is required, a 10 mm angioplasty balloon catheter may be introduced and distended. Fluoroscopic examination of the lumen of the corrected stenosis may be accomplished by the introduction of barium. The technique can also be done by passing the guide wire and angioplasty balloon catheter from above. However, dilating from below causes less distress to the patient by avoiding the gag reflex associated with manipulations past the pharynx.[7]

Results

Our experience with this technique has been with two patients with strictures after anastomosis under tension of their "long-gap" esophageal atresia.

The first patient with a 1 mm stricture was dilated six times. The dilatations were performed two to three weeks apart. After dilatation, the stricture was 9 mm in diameter. The patient has since been eating well and has had a rigid esophagoscopy for inspection. The stricture site was injected at that time with steroids to reduce inflammation and swelling.

The second patient was dilated twice. The dilatations were performed three weeks apart. This patient improved from having a 1 mm stricture to a wide patent 9 mm lumen and is currently eating well. Subsequent rigid esophagoscopy confirmed maintenance of a patent lumen.

Discussion

Esophageal stricture may occur as a result of several factors. The technique of anastomosis is probably not an important factor.[1, 3] The Haight anastomosis is thought by some to leak less often, but be more prone to stricture. Conversely, others feel that the single layer anastomosis may be less likely to result in stricture, but may be more likely to leak. In our experience, the only problems with strictures have been in "long-gap" anastomosis done for esophageal atresia without a tracheoesophageal fistula. These anastomoses are done under marked tension, even with circular myotomies, and are apt

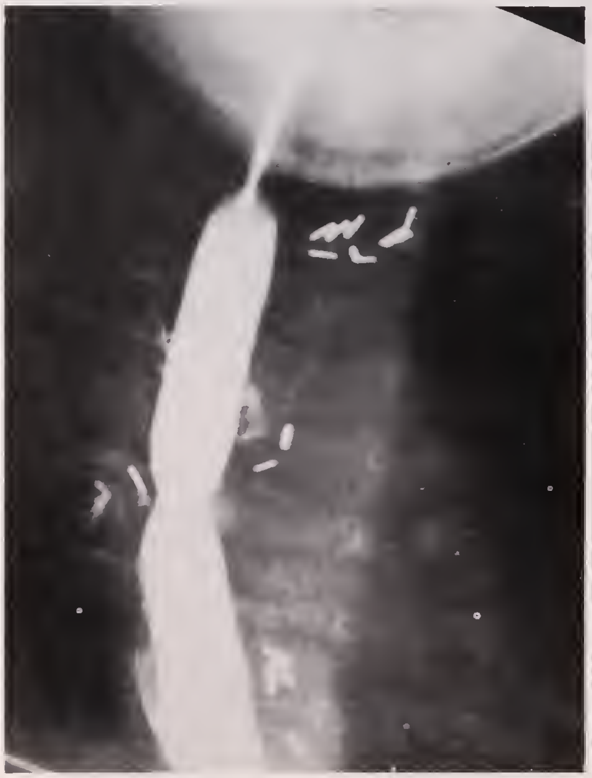

Fig. 3 - Dilatation of esophagus in progress.

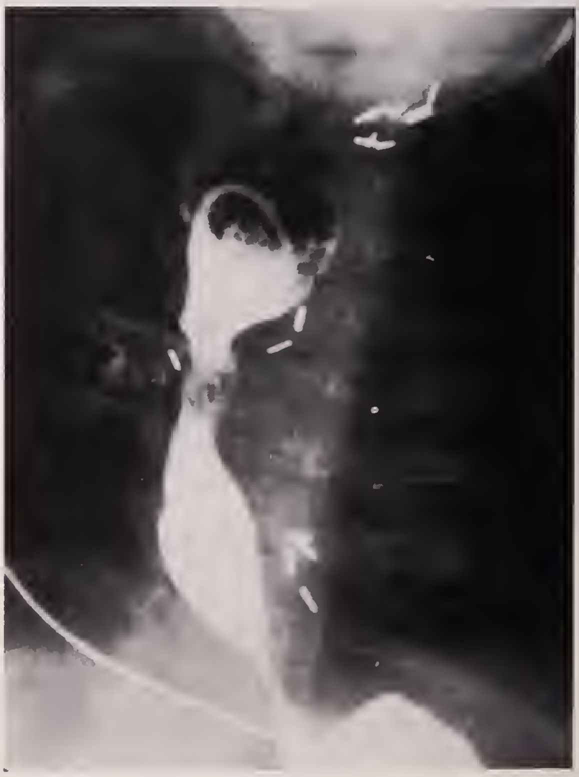

Fig. 4 - Post dilatation.

to leak. The leaks have been managed conservatively, and this method of dilating the esophageal stricture has been effective in our experience.

Summary

The esophageal abnormality leading to stricture is discussed and a method of dilating tight esophageal strictures is described. This angioplasty balloon catheter technique may be performed on an outpatient basis without anesthesia, and results in minimal distress to the patient. We feel this technique represents a useful clinical tool.

Acknowledgment

Doctor D. Neil Dickson, a gifted radiologist who died in a tragic accident on June 22, 1983, was instrumental in developing this technique. He will be deeply missed by us all.

The valuable manuscript assistance of Susan Atwood, of the Pediatrics Department of the University of North Dakota School of Medicine, is acknowledged and appreciated.

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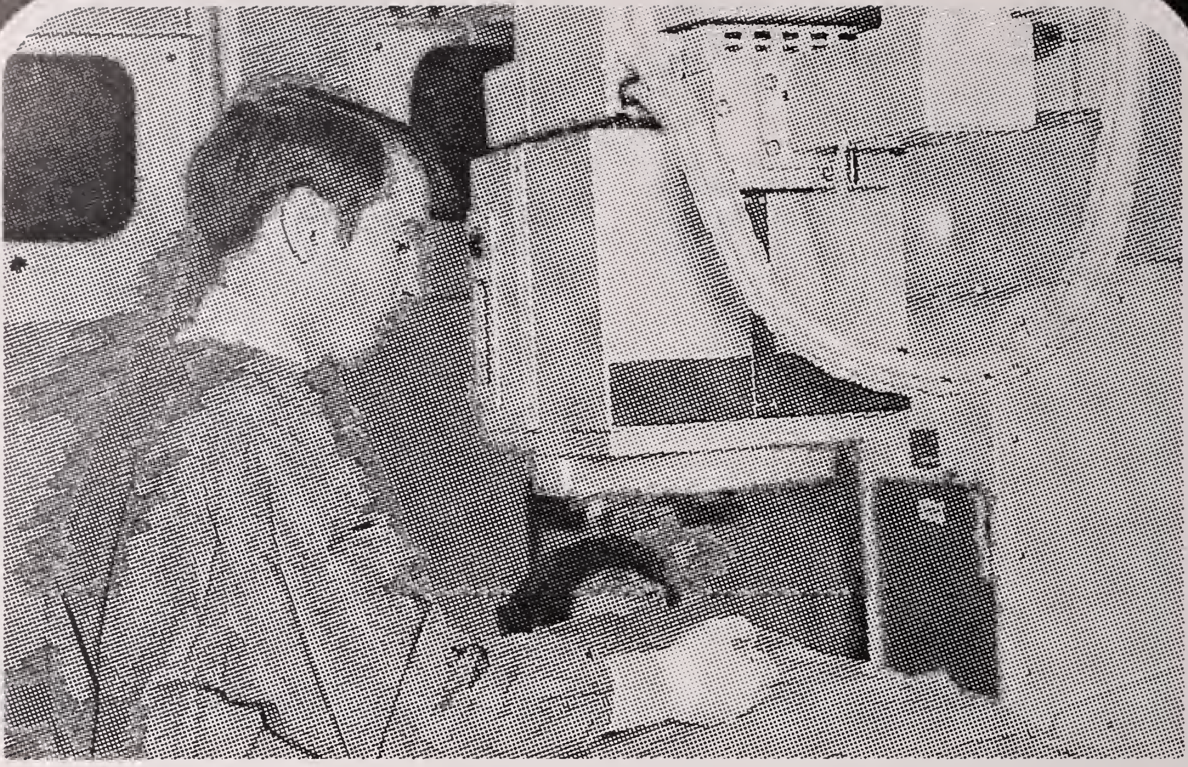

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Congenital Hypothyroidism
An Imperfection of Newborn Screening

CHARLES N. OBERG, M.D., MPH* and
CHARLES SKLAR, M.D.†

A case of congenital hypothyroidism which was missed by newborn screening is presented. The limits of the present screening program are discussed, emphasizing the need to retest infants with clinical signs and symptoms of hypothyroidism despite normal neonatal thyroid screening studies.

Since the first large-scale screening program for the detection of congenital hypothyroidism was initiated in the Province of Quebec, Canada, in 1972,[1] a controversy has persisted regarding the most desirable screening method. American and Canadian hospitals, following the recommendations from the American Thyroid Association, utilize a filter paper T_4 method with supplemental TSH testing.[2] Most European centers, however, have chosen TSH screening because of its greater sensitivity and small recall rate.[3,4]

Several workers have expressed concern that some infants born with ectopic or dysplastic thyroid glands might generate sufficient levels of T_4 to pass neonatal T_4 screening and escape detection.[5] We report such an infant in order to alert practicing physicians to the limits of the current thyroid screening method.

Case Report

A 2509 gm female was the product of a 35½ week gestation, born to a 31-year old primigravida. The infant was discharged from the hospital nursing well at five days of age. The total bilirubin concentration at the time of discharge was 11.5 mg/dl.

At nine days of age the infant was admitted to a local hospital when the bilirubin rose to 15.2 mg/dl. Phototherapy was initiated and breast feeding was discontinued with a subsequent fall in bilirubin to 8.8 mg/dl. Nursing was reinstituted and the infant was discharged. At 34 days of age the total bilirubin has increased to 13.0 mg/dl. The infant was referred to the University of Minnesota (UMH) for further evaluation of the persistent hyperbilirubinemia.

She was admitted to UMH at 38-days of life. She was an active, alert infant who had no history of constipation, lethargy, or poor feeding. Her weight, length, and OFC were at the 50th, 50th, and 60th percentiles respectively. There was a 3 x 3 cm soft anterior fontanel, a small posterior fontanel, and no widening of the sutures. Hair and skin textures were normal. She was moderately jaundiced with a small capillary hemangioma on the chest. She had no evidence of hypothermia, macroglossia, umbilical hernia, hoarse cry, distended abdomen, or goiter. Her neurologic exam was appropriate for her gestational and postnatal age with normal tone and deep tendon reflexes.

Laboratory results at the time of admission showed a hemoglobin of 13.7 gm/100 ml with 7,200 leukocytes. The platelet count, RBC indices, and reticulocyte count were all normal. The total bilirubin was 11.4 mg/dl with a direct fraction of 1.0 mg/dl. Nursing was discontinued and the bilirubin fell to 4.4 mg/dl over the next week.

Despite the possibility of breast milk jaundice as one etiology of the persistent indirect hyperbilirubinemia, a thyroid investigation was initiated.

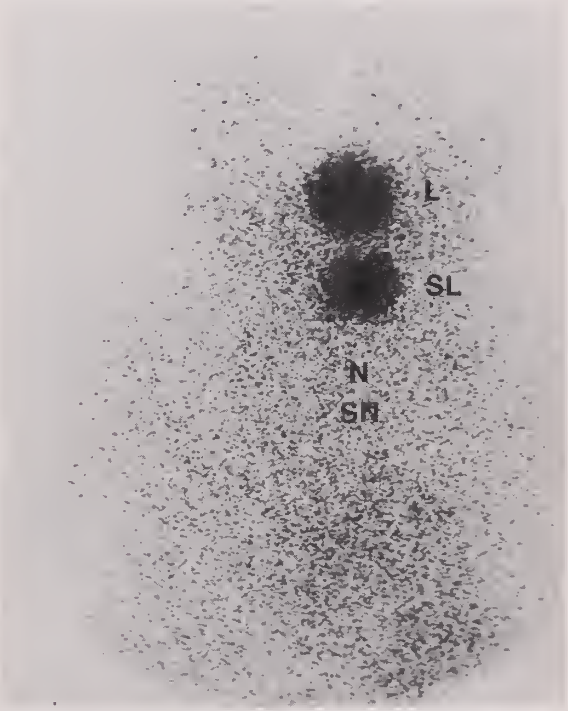

Figure - Radio-nucleotide thyroid scan demonstrating lingual (L) and sublingual (SL) remnants, as well as the location of the sternal notch (SN) and normal (N) thyroid position.

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The Table depicts the thyroid studies obtained in the newborn period and during the UMH hospitalization compared to the normal values.[6] The State Laboratory of Hygiene at the University of Wisconsin Center for Health Sciences had conducted the newborn screen. Her T_4 was 9.2 ug/dl. There were 36 infants in the run with a mean T_4 of 17.8 ug/dl. The lower level of normal was 7.0 ug/dl and a T_4 of 8.0 ug/dl was used as the criterion for supplemental TSH testing. Her T_4 exceeded this value, and a TSH was not performed. The T_4 obtained on day 38 was well below the normal range and the TSH was markedly elevated. A TSH determination was then requested from the initial filter paper specimen and was 255 uU/ml.

TABLE

Thyroid studies in the newborn period and at 38 days of age

		Normal T_4 Values			*Normal TSH Values*	
	$T_{4\text{-}RIA}$ ug/dl	*Mean*	*Range**	*TSH uU/ml*	*Mean*	*Range**
Newborn	9.2	17.8	7.0 - 28	225+	9.0	2.5 - 13.3
38 days	4.0	10.3	7.2 - 14.4	330	<2.5	<2.5

*Range equals +/− 2 S.D. from mean value
+Not initially obtained

A bone age was within normal limits inferring adequate thyroid hormone throughout the intrauterine period. This is consistent with the normal T_4 level obtained during the initial screening. The Figure depicts the radio-nucleotide thyroid scan. The scan demonstrates two small midline remnants in the lingual and sublingual position with no uptake in the normal thyroid position, suggesting maldescent of the thyroid gland. Synthroid was begun and gradually increased to 6 ug/kg/d. The patient's T_4 and TSH are now normal.

Comment

Newborn screening for congenital hypothyroidism is directed towards the detection of primary hypothyroidism. The incidence of primary congenital hypothyroidism approximates one in 4000 infants.[7] The effectiveness of newborn screening in the prevention of mental retardation for infants with congenital hypothyroidism is well established.[8] If the diagnosis and treatment is initiated prior to the appearance of clinical signs and symptoms, normal cognitive development can be anticipated. Fisher,[9] has recently summarized the merits and limitations of the various newborn screening methods currently in use. Both techniques result in false negative values and missed cases of hypothyroidism. The present case is a documented example of a compensated primary hypothyroid state which was missed by primary T_4 screening. Our patient would have been identified earlier in a program utilizing primary TSH testing. Alternatively, increasing the criterion of T_4 for supplementary TSH testing would have likewise permitted an earlier diagnosis. This report emphasizes the limitations inherent in the thyroid screening programs presently employed in the United States. The major limitation of primary TSH screening as employed in Europe is the inability to detect infants with thyrotropin-releasing hormone or TSH deficiencies. The incidence of these conditions approximates one in 100,000 infants.

Clinicians dealing with young infants should be cognizant of the potential pitfalls of the present neonatal thyroid screening programs. Retesting infants with clinical signs and symptoms of hypothyroidism despite normal newborn screening studies is essential. The early identification of the occasionally missed infant is necessary to minimize subsequent central nervous system impairment.

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New Therapeutic Approach for Mixed Anaplastic Carcinoma of the Thyroid

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Anaplastic thyroid cancer is generally fatal. Most individuals live only four to six months from the time of diagnosis. A multimodality treatment protocol developed by Durie, has resulted in some long term disease-free survivals. We report two patients with mixed papillary anaplastic thyroid cancer, treated with a modification of this protocol, consisting of surgical excision, therapeutic doses of I^{131} to ablate any residual thyroid tissue, and six courses of a four drug chemotherapy regimen. These patients are still alive 30+, 56+ months, without evidence of recurrent disease. The previous experience with anaplastic thyroid cancer at this institution has resulted in all patients but one dying within eight months from the time of diagnosis. This one exception lived 23 months. This new therapeutic strategy may extend survival, and even yield possible cures.

Cancer of the thyroid gland is a relatively uncommon malignancy, ranking 25th among anatomic sites in incidence.[2] Clinically, this malignancy may present as an asymptomatic nodule, to regional and multisystem involvement. Thyroid malignancies are classified into one of the following categories: differentiated (papillary, follicular, medullary, Hurthle), or undifferentiated (Spindle Cell, "Giant" cell, "clear" cell, small cell, or anaplastic). The prognosis for these types varies, the best found with papillary, and the worst in the anaplastic group. The latter sometimes evolves because of a de-differentiation process, in which anaplasia arises by a transformation of a preexisting differentiated carcinoma of the thyroid.[1,7] Recently, attention has been directed to new treatment modalities in the hope of improving the poor prognosis of anaplastic thyroid cancer. One such protocol (Table 1), which combines radioiodine therapy, chemotherapy, and immunotherapy has yielded extended survival periods in patients with anaplastic thyroid carcinoma.[3]

We describe here two case reports of mixed anaplastic thyroid carcinoma in which a slight modification of this treatment regimen was employed with strikingly good results.

Case Reports

Case Report 1

A 39-year-old white female on a routine physical examination during pregnancy was found to have a thyroid nodule. She delivered a healthy baby five months later. Over the ensuing nine months the mass grew in size. Workup included normal thyroid function studies, and an ultrasound study which showed a cystic thyroid mass with a solid posterior component. Aspiration of this cyst yielded no identifiable malignant cells. The cyst reoccurred within a month. On physical examination there was a 6 cm firm mass in the left lobe, which felt cystic. Laboratory data were within normal limits. Chest Xray and EKG were also normal. At operation, this lesion was cystic anteriorly, but posteriorly a hard mass was found firmly fixed to the trachea. A left thyroid lobectomy was done, leaving residual disease on the trachea, as well as a right subtotal lobectomy. Of six lymph nodes excised one was positive for metastatic disease. Pathological examination of the lesion revealed papillary thyroid carcinoma with areas of anaplasia. The patient tolerated the operation well and was discharged on the second postoperative day. She then underwent six courses of adjuvant chemotherapy as described in Table 1. Later she received radioactive iodine. She has now been followed for 30 months with no evidence of residual disease.

TABLE 1

Durie Protocol[3]

1. Radioiodine (I^{131})

2. Chemotherapy (8 cycles, each cycle every 28 days)
    (a) Doxorubicin (Adriamycin) 40 mg/m^2 IV, day 1
    (b) L-Phenylalanine mustard (Alkeran) 6 mg/m^2 PO, days 3-6
    (c) Vincristine (Oncovin) 1 mg IV, day 14
    (d) Bleomycin (Blenoxane) 15 mg IV, day 14
3. Bacille-Calmette-Guerin (BCG) immunotherapy

Modified Durie et al. Protocol- used in University of Minnesota patients included Radioiodine and 6 cycles of a four drug chemotherapy regimen. BCG is no longer used by Durie et al.

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Case Report 2

A 59-year-old white female initially was discovered to have a mass in the left thyroid lobe in 1970. Supression with oral thyroid was started in 1975. In 1978 she became hoarse; laryngoscopy revealed paralysis of the left vocal cord. The previously diagnosed thyroid mass had increased in size and a thyroid scan showed decreased uptake in the left lobe. At neck exploration, there was a 3 cm, hard mass in the left lobe of the thyroid. A left thyroid lobectomy and a partial right lobectomy ware performed. During the resection it became evident that the tumor had invaded the thyroid cartilage and trachea close to the site where the recurrent laryngeal nerve entered the larynx. The tumor was sharply shaved off the larynx and trachea. One resected lymph node revealed metastatic undifferentiated carcinoma. Sections of the resected specimen showed papillary carcinoma with areas of undifferentiated anaplasia. The postoperative course was uneventful. A month later residual right thyroid tissue was ablated with radioiodine. Afterwards the modified multimodality chemotherapy regimen was given. She tolerated both forms of treatment well. Twenty months later the patient complained of dysphagia. Barium swallow suggested external compression of the esophagus slightly above the thoracic inlet. On operative exploration of the neck no gross recurrent disease could be identified. The site at which tumor had been left behind on the thyroid cartilage at the first operation was biopsied. Permanent sections of this specimen demonstrated a small focus of tumor cells consistent with the original anaplastic cancer. Subsequent treatment consisted of radiotherapy (4500 rads to the supraclavicular area and 6075 rads to the lateral neck). Five years after the initial operation the patient complains only of mild dysphagia and has no evidence of residual tumor.

Results

Between 1973-1983, nine patients at the University of Minnesota Hospitals were seem with either a pure or mixed anaplastic carcinoma of the thyroid gland (Table 2). Five had a pure lesion, whereas four had a mixed tumor. Of the four mixed lesions, all were females, 34-84 years of age, and all had tracheal or esophageal involvement plus lymph node metastases. Initial subtotal thyroidectomy was performed in each, combined with partial neck dissection in three and radical neck dissection in one. Residual disease was left behind in all patients, involving either the trachea, the esophagus, or both. A further operation, consisting of a total thyroidectomy, was performed on one patient when recurrent disease became apparent.

Of the patients with mixed lesions, the two described above underwent the adjuvant treatment presented earlier. As noted, both are alive and free of apparent disease, 30 and 56 months after initial diagnosis.

The other two patients in the mixed lesion group, underwent further treatment involving either an additional operation, radioiodine therapy, external radiation, and/or chemotherapy. One patient had a subsequent total thyroidectomy for recurrence, and thereafter received I^{131} ablation. Fourteen months later she presented with recurrent disease in

TABLE 2

Anaplastic Thyroid Carcinoma Patients at the University of Minnesota Hospital
(1973-1983)

Mixed

Sex	*Age*	*Init. Tx*	*Further Tx*	*Survival*
F	34	ST, PND	PROT.	30 months (L&W)
F	58	ST, PND	PROT, RAD	56 months (L&W)
F	65	ST	TT, I^{131}, RAD	23 months
F	84	ST, PND, RND	RAD, CHEMO	

Pure

Sex	*Age*	*Init. Tx*	*Further Tx*	*Survival*
F	76	BX	RAD	½ month
M	73	BX	CHEMO	1 month
F	77	DEBULK	CHEMO	3 months
F	85	BX	RAD	1 month
F	58	ST, PND	RAD	4 months

ST = Subtotal Thyroidectomy
TT = Total Thyroidectomy
BX = Biopsy
PND = Partial Neck Dissection
RND = Radical Neck Dissection
L&W = Living and Well

RAD = Radiation
CHEMO = Chemotherapy
I^{131} = Radioiodine
DEBULK = Debulking Procedure
PROT = Modified Durie Protocol

the neck and a new sympton of persistent headaches. CT scan of the head showed cerebellar metastases. The patient died three months later after surviving approximately 23 months from the time of diagnosis. The fourth patient in this group obtained only a partial response with radiation and limited chemotherapy and expired eight months following diagnosis.

In the pure anaplastic group, there were five patients ranging from 58-85 years of age. Three had extensive tumor growth confined to the neck, and three also had distant metastases. Initially all underwent operation involving biopsy or subtotal thyroidectomy with partial neck dissection, or debulking procedure. All of these pure anaplastic tumor patients received further treatment consisting of radiation or chemotherapy and all five patients were dead within four months.

Discussion

Anaplastic thyroid carcinoma is seen predominantly in older people, with a peak incidence in the seventh decade and a prevalence for females. Fewer than 10% of cases occur under 50 years of age.[6,10] Commonly patients present with a rapidly enlarging neck mass. Hoarseness, dysphagia, and stridor are often present, and a prior history of a goiter is common.[6] Clinically, one of the following patterns is seen: (1) patients with diagnosed thyroid carcinoma whose disease becomes fulminant with time, (2) patients with a longstanding histologically undiagnosed goiter that begins to grow at a rapid rate, (3) patients without previous thyroid disease who develop a rapidly growing neck mass, (4) patients without whose permanent pathological diagnosis at the time of the initial thyroid surgery reveals a focus of anaplastic carcinoma, and1(5) patients with widespread disease, where biopsy of an accessible metastasis reveals anaplastic cancer.[1]

Thyroid function studies are usually of limited value. Chest Xray may be useful to detect metastatic disease.[6] With specific presenting symptomatology, selected studies are indicated (eg. barium swallow in a patient with dysphagia). Isotope scans can be useful to demonstrate areas of decreased uptake. Histological assessment is the key factor in diagnosis and is made either by biopsy of the thyroid gland or biopsy of a metastases. A mixed lesion may suggest that transformation has occurred from a more benign papillary or follicular thyroid tumor to anaplasia. Mixed lesions have a slightly better prognosis than the pure lesions, but even in the mixed subgroup survival does not usually exceed one year.[11]

Treatment of these neoplasms, operation, radiotherapy, and limited chemotherapy used singly or in a combined approach[4, 5, 8] have been ineffective; although, operation has offered some benefit in control of local disease. Radiation and/or chemotherapy combined with excision have been more effective than either one of these alone.[8] Some have argued for a combined therapeutic approach.[3, 8, 9] Regardless of the treatment used the mean survival time from the onset of symptoms has ranged from five to eight months.

Recently a new therapeutic approach has improved survival in this lethal disease. This multimodality regimen consists of I^{131} ablation, eight cycles of adjuvant chemotherapy and BCG immunotherapy.[3] Eleven patients in Durie's study with either the pure anaplastic or the mixed anaplastic-differentiated cell type were subjected to this regimen. Reported disease-free survival periods ranged from 14 to 73 months. Five of the eleven patients remained in complete remission for over four years. In the mixed anaplastic group, disease-free survival periods ranged from 14 to 59 months.

A modification of this therapeutic regimen was used for treatment of two patients at the University of Minnesota, both of whom had mixed anaplastic carcinoma of the thyroid. We observed results similar to those of Durie, with continuing disease-free survival at 30 and 56 months. These results suggest that this therapeutic combination can prolong survival in patients with mixed anaplastic lesions of the thyroid. Its role in treating pure anaplastic thyroid cancer is less certain. Some cures may be obtained, an outcome never seen with previous methods of treatment.

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7-11. Will be found on page 901.

Malpractice Crisis for All Health Care Professionals

PETER M. JENSEN, M.D.*

Recently it was made quite clear to me that not only physicians and certain medical specialists, but rather all health care professionals, are deeply involved in and should be concerned about the present malpractice environment. On August 12 1985, at the behest of a nurse-midwife employed by our clinic, I testified before a public hearing at the State Capitol. The purpose of this hearing was to determine whether the State of Minnesota should, in essence, become a malpractice insurer, pursuant to Statute 14.14 (1984). It was my purpose to support our nurse-midwife, and nurse-midwives in general, in their search to obtain some kind of malpractice coverage. It was clear that some of the individuals involved were in danger of losing their malpractice coverage and being unable to practice, within weeks.

I am still somewhat unclear as to the reasons behind commercial carriers' initial refusal to insure nurse-midwives. According to recent statistics, only 6% of practicing nurse-midwives have ever had suit filed against them. This is far below, possibly by as much as a factor of 10, other practitioners who work almost exclusively in the field of obstetrics. It is my experience and understanding that nurse-midwives select and follow basically healthy pregnancies and spend a great deal of time with their patients both during clinic visits and throughout labor. In our practice, as in most nurse-midwife practices, those patients who develop complications are referred to a backup physician. It is a common belief, and I think rightly so, that there are two major factors in most malpractice litigation: a poor result, and lack of rapport with patient and family. It would seem to me that there is no group in obstetrical practice that is as well protected in these areas as the Certified Nurse-Midwives.

In addition to providing a female alternative in obstetrical care in our community, there may be other spinoff benefits to physicians. With the nurse-midwife to provide some (in our case 25-30%) of the normal obstetrical care, physicians are able to spend more time with the complicated obstetrical patient, that patient who would be most likely to have a poor outcome, and thus be a higher liability risk. This arrangement may indeed lower the liability risk for the entire practice.

At the August 12 hearing it became apparent, as well, that nurse-midwives were not the only health care professionals on the verge of malpractice disaster. Counseling professionals, most specifically those involved in sexual abuse counseling and intervention, were also being refused continuation of their malpractice insurance. It became obvious that physicians are not the only professionals working in areas of high liability risk. While our premiums in Family Practice, Obstetrics, and other specialties may be increasing rapidly, there are smaller groups of health care professionals and certain individual subspecialists who are being denied malpractice coverage entirely. Working aggressively with the medical profession's liability dilemma, we should be constantly aware of the even broader picture in the helping professions. Hopefully, there will be an opportunity to work together for mutual benefit.

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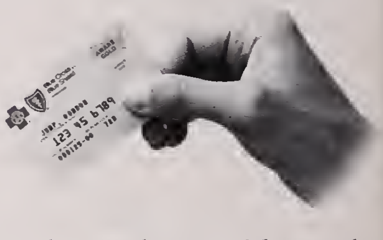

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L. RONALD FRENCH, M.A., M.P.H., PH.D.*; ALLAN N. WILLIAMS, M.A., M.P.H.*; and RONALD G. CAMPBELL, M..D., M.P.H.†

This article provides an overview of current knowledge of effects of lead toxicity, the extent of the problem in Minnesota and recent initiatives to address lead exposures. Information for the practicing physician is presented, including the newly revised lead screening criteria from the Centers for Disease Control (CDC).

Concern about lead exposures, particularly in children, has not subsided despite significant reductions in average blood lead levels in the population and the rarity of overt lead poisoning over the past several years. This concern persists, both nationally and in Minnesota, due to the significant proportion of children who have elevated blood lead levels. Though asymptomatic, these children are at greater risk of subsequently developing lead poisoning, and at possible risk of mental impairment, behavioral problems, or other adverse health effects.

A national survey conducted between 1976 and 1980 showed 4% of children under six years of age had elevated blood lead levels[6]—then defined as 30 mg/dl or greater. Almost 20% of inner city black children had elevated lead levels. During the course of this study (1976-1980) average blood lead levels decreased between 31 and 42 percent depending on the group considered. The average blood lead of white children declined from 16.5 to 9.6 mg/dl. The decline was highly correlated (r0.95) with, and thought to be a consequence of, the decreasing use of leaded gasoline.[1]

The prevalence of elevated blood lead levels in Minnesota children is not known with certainty. No state, including Minnesota, currently screens all children for blood lead levels. Essentially all lead screening in Minnesota occurs in the urban area of Minneapolis and St. Paul as part of other health and nutrition programs targeted to lower income families. Minnesota data from these nutrition and health screening programs and several research studies indicate that the proportion of children with blood lead levels of 30 mg or greater among lower income populations is close to one percent, with the apparent exception of Southeast Asians—particularly Hmong.[2,8] Health screening programs that include Hmong children have had proportions as high as three to four percent.

Concern Over Low Levels

During the 1950s and 1960s it was not uncommon for children to present with frank symptoms of lead poisoning. At Chicago's Cook County Hospital, for example, 182 cases of lead encephalopathy were treated between 1959 and 1962; 28% of these children died.[5] Children surviving lead poisoning often developed serious sequellae including mental retardation. In response to the seriousness of this problem, lead screening programs were begun in several cities. An unexpected finding of these programs was the large number of children with elevated blood lead levels who appeared to be asymptomatic. This finding was confirmed nationally by the mass screening of children in the early 1970s supported by the federal Lead-Based Paint Poisoning Prevention Act. The emerging issue was whether these "asymptomatic" children might also be at some risk.

Clinic-based studies in the early and mid-1970s suggested the possibility of a four-to-five-point IQ deficit in children without symptoms who had chronic blood lead levels of 60 mg/dl or greater. The evidence from clinic studies for blood lead levels of 40-60 mg/dl was less consistent but also suggested psychologic deficits.[11] In 1979 concern about these lower blood lead levels appeared to be supported by a now classic, but controversial, epidemiologic study by Needleman and his colleagues.[9] Using dentine lead values as a measure of chronic exposure among a sample of Boston area school children, Needleman reported statistically significant differences in IQ between high lead and low lead groups. The magnitude of the difference was similar to that of clinic studies of asymptomatic children who had much higher blood lead levels. This raised serious questions about the threshold at which lead might be having an effect, and confirmed the fears of many about the possible significance of elevated blood lead in asymptomatic children. However, several subsequent reviews of Needleman's work point out methodologic problems that weaken any conclusions that can be drawn.[10] Attempts to replicate Needleman's study by other investigators generally have been unsuccessful, although a similar pattern of lower performance among high lead groups has been consistently reported.[4] At this time it is unclear if this pattern is due to methodologic problems, a casual relationship with lead, or confounding factors such as parental supervision, education, IQ and socio-economic status that can affect both performance and exposure to lead.

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Recent Federal and State Initiatives

Federal and state initiatives addressing lead exposure have resulted from the concern about possible health effects of elevated blood lead levels and the realization that lead levels are strongly correlated to gasoline lead use. The U.S. Environmental Protection Agency (EPA) established new standards for the amount of lead in gasoline.[4] Effective July 1, 1985, the average lead content was reduced from 1.10 grams of lead per gallon of leaded gasoline to 0.50 grams. As of January 1, 1986, regulations specify that lead content be further reduced to 0.1 grams per gallon. Very recently, the Centers for Disease Control (CDC) has again lowered the "safe levels" for blood lead values.[3] Since 1978, undue lead absorption had been defined by CDC as an erythrocyte protoporphyrin (EP) level of 50 mg/dl or greater, with a confirming blood lead level of 30 mg or greater. The newly revised levels specify an EP of 35 mg or greater and a blood lead of 25 mg or greater. The CDC also has set new priorities for screening.

As part of Minnesota Special Session Laws of 1985, the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA) are required to establish a collaborative lead program. The MPCA will have responsibility for assessing and controlling contamination of soils by lead. The MDH will have responsibility for assuring coordinated lead screening activities. A portion of the new state cigarette tax will be used to fund these efforts. Due to possible exposures from plumbing, the Minnesota Legislature banned the use of lead solder and lead pipes as of June 1, 1985.

For the Practicing Physician

The media has given a great deal of attention to issues of lead exposure over the past several years. This attention has occured both in the national and state media, creating a heightened public awareness. The practicing physician cansophisticated questions about the effects and sources of lead. Depending on recent media attention, questions may relate to lead in water, food, play areas and the home environment.

Several sources of information for addressing such inquiries are available from state and federal agencies. "Lead - A Health Problem for Our Children" deals with the sources and effects of lead, testing procedures for lead, and approaches for preventing elevated blood lead in children. It is available to the public through the Section of Health Education at the MDH. "Lead in the Home Garden and Urban Environments" (AG-FS-2543, 1985) discusses lead in garden soils and play areas, and it is available from the Agriculture Extension Service at the University of Minnesota, St. Paul. For a more comprehensive discussion, "Lead Exposure and the Health Effects on Children," a 1984 MDH report to the Minnesota Legislature, can be obtained from the MDH's Division of Maternal and Child Health. Information on screening, diagnostic evaluation, clinical management and abatement procedures is

TABLE

Centers for Disease Control (CDC) Screening
Priorities for Elevated Blood Lead

Priority	Age	Target Population
1	12 months - 36 months	Living in older, dilapidated housing
2	9 months - 6 years	Sibling, housemates, playmates of children with identified lead toxicity
3	9 months - 6 years	Living in older dilapidated housing
4	9 months - 6 years	Whose parents or household member participates in lead related occupation or hobby
5	9 months - 6 years	Living near lead smelters, processing plants, highways with heavy traffic, or near hazardous sites with lead
6	12 months - 36 months	All children
7	9 months - 36 months	All children

found in the statement by the Centers for Disease Control (CDC), January 1985: "Preventing Lead Poisoning in Young Children." This document can be obtained directly from CDC or from the Division of Maternal and Child Health.

CDC's priorities for screening (Table) provide guidance in assessing the possibility of exposure to lead in both adults and children. Although CDC's screening priorities are directed heavily towards inner city children, excessive lead exposure is possible in other groups. Workers in a number of settings can be exposed to lead and, when hygienic procedures (changing work clothes and washing) are not practiced, dusts can be carried home from the workplace. A variety of household activities involve used of leaded materials and may be routes of exposure. Examples included certain arts and crafts, hand-loaded ammunition, and sinkers for fishing. Lead used for these activities is often available to children in the house. Several studies have documented that sanding and other refinishing activities in older homes with leaded paint and plaster may produce significant exposures for all family members. Homes built before the 1950s are likely to have leaded paint on both interior and exterior surfaces. In some instances, lead can be leached from lead solders that were commonly used in copper plumbing systems prior to the recent ban. Homes, playgrounds and child care centers close to heavily traveled roads or near lead industries may have very high lead levels in the soil and dust, posing a significant source of exposure.

As part of this awareness of lead exposure, those clinicians seeing children may want to consider increased use of the erythrocyte protoporphyrin (EP) test as an inexpensive and effective screen for both elevated lead and iron deficiency. Studies indicate that children with elevated EP values are likely to have elevated blood lead, iron deficiency, or both. Thus, a child with an EP greater than 35 mg/dl should have a confirming blood lead test (CDC, 1985).

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Allegations

Delay in diagnosing necrotizing fosciitis following hemorrhoid excision.

Facts of Case

The patient, a 24-year-old female, was seen by her family practitioner on September 22 in her eighth month of pregnancy for painful hemorrhoids. Three external hemorrhoids were found on examination, two of which were acutely thrombosed. The two thrombosed hemorrhoids were excised and the area packed. The patient was given a prescription for an analgesic and advised to take sitz baths using a rubber donut. The next morning the patient contacted the clinic complaining of increased pain and swelling in the area of the previously treated hemorrhoids. She was seen by Dr. X., the family practice physician on-call for the weekend, at approximately 10:00 a.m. On examination Dr. X noted the previously excised hemorrhoids and described the inner aspect of the left buttock as swollen and ecchymotic. He felt these findings were not unusual after external hemorrhoid excision. He believed the patient's pain was due to the third hemorrhoid which was not previously excised. The patient also complained of nausea and vomiting which Dr. X. felt was due to the Tylenol #3 she had been taking for pain since the previous day. Although the patient complained of chilling, no vital signs were documented. The patient was advised to continue the sitz baths and apply hydro cortisone cream to the rectal area. At approximately 4:00 p.m. that afternoon, the patient's mother-in-law telephoned Dr. X to report that the patient had an elevated temperature. On the basis of this telephone conversation, Dr. X telephoned a local pharmacy with a prescription for Keflex. He instructed the patient's mother-in-law to continue having the patient take sitz baths and to take her to the emergency room if she did not improve, or if she felt worse. This telephone conversation was not documented in the medical record. The patient testified in her deposition that she made numerous telephone calls to Dr. X on the evening of September 12 and on September 13. According to her testimony, she was advised to continue her medication and take sitz baths despite reporting increased pain and swelling and blistering. Dr. X denied receiving any such telephone calls and testified that had the patient called him again, he would have advised her to come in immediately for an examination. The patient was then seen by her family practitioner on the morning of September 14. He noted an area of necrotic tissue on the left buttock and diagnosed acute cellulitis. The patient was immediately admitted to a local hospital where a surgical consultation was obtained. Antibiotics were begun, and she was transferred to a metropolitan hospital where the diagnosis of necrotizing fasciitis was made.

Disposition

A settlement was reached just prior to trial; the terms of which cannot be disclosed pursuant to a court order. The settlement did include a substantial amount of cash and an annuity for future payments.

Reasons for Settlement

The plaintiff obtained an expert opinion which was critical of Dr. X's failure to diagnose an infectious process on the morning of September 12. The expert stated that vital signs, white blood count, and surgical consultation should have been obtained in light of the plaintiff's condition. The plaintiff's expert was also critical of Dr. X's failure to examine the patient on the afternoon of September 12 when the elevated temperature was reported. While Dr. X perhaps could not have specifically diagnosed necrotizing fasciitis, he could have recognized that an infectious process was present and further evaluated the patient. The expert stated that if proper treatment had been initiated at this time, the progression of the necrotizing fasciitis could have been minimized which would have resulted in significantly less scarring and permanent functional disability.

Risk Management Comments

Lack of documentation is one of the leading reasons why otherwise defensible cases must be settled. Examination findings should be clearly documented in the medical record. When describing an observation or finding, such as the ecchymosis in this case, a specific, detailed description, including estimated size, should be recorded. Vital signs should routinely be taken and recorded when the patient complains of symptoms which may be consistent with an infection. The alleged telephone calls to Dr. X in this case were a critical factor in the decision to settle the case. Without documentation, it is very difficult to rebut the patient's testimony that she called the physician to report her worsening condition. All telephone calls to and from patients should be documented. A consistent system to document telephone calls to the clinic and to the on-call physician should be adopted. The documentation should include the information reported by the patient, further information received upon questioning by the physician, any treatment prescribed and instructions given to the patient. One method of documenting telephone calls is to use a form which notes the patient's name, reason for calling with a space for the physician to note further information, treatment prescribed, and instructions. This form can then be placed in the patient's chart to ensure that a permanent record is maintained. It is essential to obtain as much information as possible from the patient or family member before treatment is prescribed without examining the patient. The physician is responsible for eliciting the necessary information to make a diagnosis. If sufficient information cannot be obtained by telephone, the patient should be examined prior to prescribing treatment.

Echoes of Our Past

Sir William Osler: A Fixed Point in a Changing World

Jack D. Key, M.A., M.S.*

Charles G. Roland, M.D. in "The Palpable Osler: A Study in Survival"* writes: "Although (Osler) died in 1919 and did not live in North America after 1905 (his) name is still recognized by most physicians on this continent—and by many nonphysicians as well. A remarkably large coterie read about Osler, collect Osleriana of all kinds, join clubs and societies eponymizing the man, and write articles about him." The questions arise—why this phenomenon and why the adulation? Roland in his well-written paper answers. He concludes that "Osler lives today because he was a great clinician, and because he wrote well and collected a great library, and because he had an enduring influence on colleagues and students. But his influence continues strong especially because of his humanism, a quality that resonates clearly with a contemporary resurgence of belief in the importance of humanism in restoring art to today's scientific physician."

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*Librarian, Mayo Clinic, Rochester, Minnesota.

Minnesota Physician's Directory

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Cover Photograph

"Sunset on the Ranch"

Dr. Freeman D. Kovack, Minneapolis family physician, took the cover photograph while visiting his daughter and son-in-law on their ranch in Mission, South Dakota.

He used a Nikon F8 camera, 1.5 second exposure.

Dr. Kovack has been a frequent cover contributor to Minnesota Medicine, having had slides featured on the October 1982, October 1983, and July 1984 covers.

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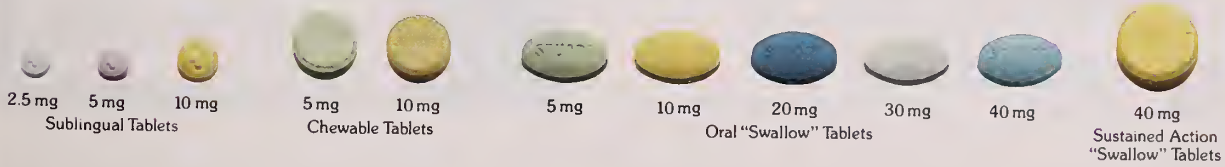

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See following page for brief summary of prescribing information.

SORBITRATE®
(ISOSORBIDE DINITRATE)

Please consult full prescribing information before use. A summary follows:

INDICATIONS AND USAGE: SORBITRATE (isosorbide dinitrate) is indicated for the treatment and prevention of angina pectoris All dosage forms of isosorbide dinitrate may be used prophylactically to decrease frequency and severity of anginal attacks and can be expected to decrease the need for sublingual nitroglycerin.

The sublingual and chewable forms of the drug are indicated for acute prophylaxis of angina pectoris when taken a few minutes before situations likely to provoke anginal attacks Because of a slower onset of effect, the oral forms of isosorbide dinitrate are not indicated for acute prophylaxis

CONTRAINDICATIONS: SORBITRATE is contraindicated in patients who have shown purported hypersensitivity or idiosyncrasy to it or other nitrates or nitrites. Epinephrine and related compounds are ineffective in reversing the severe hypotensive events associated with overdose and are contraindicated in this situation.

WARNINGS: The benefits of SORBITRATE during the early days of an acute myocardial infarction have not been established If one elects to use organic nitrates in early infarction, hemodynamic monitoring and frequent clinical assessment should be used because of the potential deleterious effects of hypotension

PRECAUTIONS: General: Severe hypotensive response, particularly with upright posture, may occur with even small doses of SORBITRATE The drug should therefore be used with caution in subjects who may have blood volume depletion from diuretic therapy or in subjects who have low systolic blood pressure (eg, below 90 mmHg) Paradoxical bradycardia and increased angina pectoris may accompany nitrate-induced hypotension. Nitrate therapy may aggravate the angina caused by hypertrophic cardiomyopathy

Marked symptomatic, orthostatic hypotension has been reported when calcium channel blockers and organic nitrates were used in combination. Dose adjustment of either class of agents may be necessary

Tolerance to this drug and cross-tolerance to other nitrates and nitrites may occur Tolerance to the vascular and antianginal effects of isosorbide dinitrate or nitroglycerin has been demonstrated in clinical trials, experience through occupational exposure, and in isolated tissue experiments in the laboratory The importance of tolerance to the appropriate use of isosorbide dinitrate in the management of patients with angina pectoris has not been determined However, one clinical trial using treadmill exercise tolerance (as an end point) found an 8-hour duration of action of oral isosorbide dinitrate following the first dose (after a 2-week placebo washout) and only a 2-hour duration of effect of the same dose after 1 week of repetitive dosing at conventional dosing intervals On the other hand, several trials have been able to differentiate isosorbide dinitrate from placebo after 4 weeks of therapy and, in open trials, an effect seems detectable for as long as several months

Tolerance clearly occurs in industrial workers continuously exposed to nitroglycerin. Moreover, physical dependence also occurs since chest pain, acute myocardial infarction, and even sudden death have occurred during temporary withdrawal of nitroglycerin from the workers In clinical trials in angina patients, there are reports of anginal attacks being more easily provoked and of rebound in the hemodynamic effects soon after nitrate withdrawal The relative importance of these observations to the routine, clinical use of isosorbide dinitrate is not known However, it seems prudent to gradually withdraw patients from isosorbide dinitrate when the therapy is being terminated, rather than stopping the drug abruptly

Information for Patients: Headache may occur during initial therapy with SORBITRATE Headache is usually relieved by the use of standard headache remedies or by lowering the dose and tends to disappear after the first week or two of use

Drug Interactions: Alcohol may enhance any marked sensitivity to the hypotensive effect of nitrates

Isosorbide dinitrate acts directly on vascular smooth muscle, therefore, any other agent that depends on vascular smooth muscle as the final common path can be expected to have decreased or increased effect depending on the agent

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term studies in animals have been performed to evaluate the carcinogenic potential of this drug A modified two-litter reproduction study in rats fed isosorbide dinitrate at 25 or 100 mg/kg/day did not reveal any effects on fertility or gestation or any remarkable gross pathology in any parent or offspring fed isosorbide dinitrate as compared with rats fed a basal-controlled diet

Pregnancy Category C: Isosorbide dinitrate has been shown to cause a dose-related increase in embryotoxicity (increase in mummified pups) in rabbits at oral doses 35 and 150 times the maximum recommended human daily dose There are no adequate and well-controlled studies in pregnant women SORBITRATE should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: It is not known whether this drug is excreted in human milk Because many drugs are excreted in human milk, caution should be exercised when SORBITRATE is administered to a nursing woman

Pediatric Use: The safety and effectiveness of SORBITRATE in children has not been established

ADVERSE REACTIONS: Adverse reactions, particularly headache and hypotension, are dose-related In clinical trials at various doses, the following have been observed

Headache is the most common (reported incidence varies widely, apparently being dose-related, with an average occurrence of about 25%) adverse reaction and may be severe and persistent Cutaneous vasodilation with flushing may occur Transient episodes of dizziness and weakness, as well as other signs of cerebral ischemia associated with postural hypotension, may occasionally develop (the incidence of reported symptomatic hypotension ranges from 2% to 36%) An occasional individual will exhibit marked sensitivity to the hypotensive effects of nitrates and severe responses (nausea, vomiting, weakness, restlessness, pallor, perspiration, and collapse) may occur even with the usual therapeutic dose Drug rash and/or exfoliative dermatitis may occasionally occur Nausea and vomiting appear to be uncommon Case reports of clinically significant methemoglobinemia are rare at conventional doses of organic nitrates The formation of methemoglobin is dose-related and, in the case of genetic abnormalities of hemoglobin that favor methemoglobin formation, even conventional doses of organic nitrate could produce harmful concentrations of methemoglobin.

DOSAGE AND ADMINISTRATION: For the treatment of angina pectoris, the usual starting dose for sublingual SORBITRATE is 2.5 to 5 mg, for chewable tablets, 5 mg, for oral (swallowed) tablets, 5 to 20 mg, and for controlled-release forms, 40 mg

SORBITRATE should be titrated upward until angina is relieved or side effects limit the dose In ambulatory patients, the magnitude of the incremental dose increase should be guided by measurements of standing blood pressure

The initial dosage of sublingual or chewable SORBITRATE for prophylactic therapy in angina pectoris patients is generally 5 or 10 mg every 2 to 3 hours Adequate controlled clinical studies demonstrating the effectiveness of chronic maintenance therapy with these dosage forms have not been reported

SORBITRATE in oral doses of 10 to 40 mg given every 6 hours or in oral controlled-release doses of 40 to 80 mg given every 8 to 12 hours is generally recommended The extent to which development of tolerance should modify the dosage program has not been defined *The oral controlled-release forms of isosorbide dinitrate should not be chewed*

DOSAGE FORMS AVAILABLE: Sublingual Tablets (2.5, 5, 10 mg); Chewable Tablets (5, 10 mg), Oral Tablets (5, 10, 20, 30, 40 mg), Sustained Action Tablets (40 mg)

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Doctor's Journal —One Day's Entry Ruminations on Town and Gown

RICHARD SAUNDERS, M.D.*

The University of Minnesota is on my mind all day today, so I decide to make it the focus of my journal tonight.

Driving to work this morning on Interstate 94, I pass one of those large blue road signs alerting motorists and ambulances to the nearest emergency hospital. The sign clearly directs those who need aid to the HCMC-MMC Hospital Complex. What's so odd about this sign is that it's placed about one-fourth mile ahead of the University of Minnesota exit—the quickest route to the U of M Hospitals. Don't they treat emergencies at the U of M any more?

Rounds and a Lecture

As I make hospital rounds, two of the patients I see are former University of Minnesota Hospital patients. Both are hospitalized for complex surgery which they and their referring physician felt could best be done "downtown" in a Minneapolis private hospital.

At 7:30 a.m., after completing rounds, I attend a lecture on human genetics at a private hospital education seminar. Dr. Richard King of the University of Minnesota Department of Medicine is the guest lecturer. As always, Dick is lucid, entertaining, and enlightening. The audience is spellbound. This is the University at it best; a gifted teacher teaching interested students—in this case, a group of practicing physicians. Why, I wonder, is this excitement not a regular common occurrence for those of us who practice?

Encountering an Editor

Before arriving in my office, Dr. Richard Reece, the editor of *Minnesota Medicine*, has me look over the galley proof of the editorial he wrote on the U of M Medical School. For pages, he dissects the problems and strengths of the institution as he's discovered them as an "outsider"—one of those Twin City physicians whose skills were not sharpened either by attending the U of M Medical School or by postgraduate study there. His summary—that the institution does have strengths; that it at last is beginning to recognize its need to, and is learning how to exploit those strengths; and that perhaps it's not too late—sobers me. After all, unlike Dick, I spent eleven years there. Thinking of your birthplace faltering is disquieting.

Research Proposals in the Office

As usual, my office patients distract me. Two farm wives with particularly severe and refractory disease agree to enter an experimental study of the effect of a synthetic hormone on their disease. This hormone is a product of the biotechnical revolution, and they will be medical pioneers in the truest sense. I'm too busy today to discuss another experimental study with a drug company representative who is in town and who patiently waits in my waiting room for two hours. She'll have to make another appointment. But I promise myself that this weekend I'll review the three proposals from other research companies I've tucked into my briefcase.

Why are all these exciting ideas flowing through our group practice rather than the University of Minnesota? Is it our large supply of cooperative patients, our lack of red tape, our price, our interest in clinical research, or something else?

University Advertising

I leave work early today and drive North with the kids who are at last tucked in. Time to read and see who qualified for the World Series. I turn on the TV to get the scores—and I'm met (to my shock!) by an advertisement from the University of Minnesota Hospitals. I'm used to the mainstream hospitals and the insurance company money-grubbers tooting their horn on TV—it seems some kind of joke, if not a downright hoax. But the University of Minnesota?! Advertising on TV for patients! Good Grief. Has no one any taste anymore? Will the Mayo Clinic be next, or are they going to continue to depend on quality service, excellent medicine, pertinent research, and first rate continuing education to remain viable?

The ad said such things as "in the forefront of cardiac surgery." But their "forefront" was thirty years ago. Do people still have heart surgery at the University? See what happens? They start this nonsense, and the doctors of the community ridicule them. The result? They turn what could and should be their greatest asset—the local practicing physicians—into their greatest detractors if not their downright enemy.

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*Richard Saunders is a physician currently practicing in the Twin City Metropolitan Area who for many years was a member of the University of Minnesota Medical Center full-time faculty.

Above the background of this advertising noise, there is one clear signal: rampant self interest has gone too far. Sentiments have been expressed and now acted upon at the University of Minnesota that raise the Medical School to some kind of radiant divinity, bearing no relation to reality. There is only one cure for this excessive attention to University self interest, and that is the creation of a cooperative Town-Gown effort to restore the Medical School to it's rightful place of leadership in the community.

The Soul of Medicine

The truth is, and doctors throughout the community know it and express it daily, we *need* a first rate medical school. We need it. If the sick constitute the body of medicine, practicing physicians the brain, and nurses the heart—the medical school is the soul. It is the super ego to the id (disease) and the ego (doctors and nurses).

If I'm going to know about genetic engineering, Dick King has to tell me. Without a medical school, there's no Dick King, and I remain ignorant. And as good as my colleagues and I may be, those who come after will be better. But only if some come after (for that we need a medical school), and only if they are well taught (for that we need a medical school). And for a community to excel in medicine as ours has and longs to, it has to be involved in producing the best. For that we need a first rate medical school.

This Is Minnesota

This is not New York City or Chicago. This is Minnesota. We do not have and shall not have hundreds of thousands of ignorant and/or impoverished medically indigent people providing an endless stream of patients to our teaching hospitals. We are either more enlightened or more fortunate, or both. People here have access to excellent care without resorting to charity institutions. Quite frankly and honestly, 99.9 percent of our population can get excellent medical care—from cardiovascular surgery to orthopedics; from oncology to obstetrics; from ear surgery to physical rehabilitation—without the University Hospital. (The other 0.1 percent may need a bone marrow or liver transplant.) And the area is such an attractive place to live and work, and the national physician glut is so enormous, that even were the University Hospital and Medical School to close, we'd have an unending supply of good doctors. But, we'd all be losers. How would we learn about genetic engineering, for instance?

While it's obvious to most doctors inside and outside the University that we need the medical school, it's equally obvious there is a problem. Indeed there are several problems—and I think they are interrelated, identifiable, and solvable. So here's one doctor's view of what's wrong, and what to do about it.

Town-Gown Problems

In no particular order, I'll list several (though certainly not all) problems that affect the University and the non-university Medical Community—hereafter Gown and Town.

1. Training doctors is important work. It's not easy. (Those of us in practice have too often forgotten how ignorant we were, and how hard it was for our teachers to mold us.) And it's expensive. These obvious facts are too often forgotten, by both Town and Gown, resulting in inadequate attention to financing and manning of the educational effort.

2. Teaching young people how to "doctor" requires patients—and the University does not have enough patients. Increasingly, the pool of patients is controlled by Town physicians, and to an even greater extent, by third party payers who have no interest in education.

A solution to this problem must be found by Town working with Gown. The alternatives are both unacceptable: close the University Hospital, or force the Gown staff to find a solution on their own. They are currently taking the latter approach, a course that is guaranteed to increase the level of Town resentment. This will lead to a deeper rift in the medical community, hurting everyone. The University must learn that it *needs* the active cooperation of the doctors in the community and must stop acting like it is "some kind of radiant divinity." And as soon as it is obvious that realization has been reached, Gown *must* respond with a spirit of open cooperation.

3. Training doctors requires proper role models—i.e., doctors who are primarily engaged in being doctors. The University Medical School is woefully understaffed with full time clinicians, particularly in the critical disciplines of Medicine and Pediatrics.

4. From the student perspective, the faculty emphasizes their own individual research too much. There are not nearly enough Renaissance Men—

teachers who understand medicine, science, and students — and can make medicine and science understandable *and* exciting to the students.

5. From the University staff perspective, there is too much Town-Gown animosity. The faculty view themselves as embattled and resented by the Town LMDs. And they act as though they don't understand why. They also make no effort to find out. Here we have an institution that prides itself on its ability to solve a tough problem by doing research into its root causes. Yet, it has done no systematic investigation into what is arguably the most important problem ever to confront it: the cause of its accelerating loss of respect in the local medical community.

6. From the Town standpoint, the Medical school is viewed as peopled with too many excessively arrogant egotists bent on protecting their turf, oblivious to the communities' needs and wishes. (Does anyone care to hear a University spokesman say yet once more, "We have the best doctors in the state"—a statement that is at best a lie, and at worst an insult?)

7. As a corollary, the University faculty is viewed, at least by the more sophisticated practitioners in the metropolitan area, as often being inferior clinically to the best clinicians in the private sector—as well as being less available, more likely to "steal" patients, and less likely to communicate findings and share responsibility.

8. In addition to being inadequate to helping us with our problem patients, the participation of the Gown staff in the ongoing education of Town doctors, with a few notable exceptions (e.g., Orthopedics, Dermatology) has been woefully deficient. No effort. No innovation. No excitement. No fun. Minimal participation in the local hospital programs. Passive. Where is Bob Good when we need him? And where are the new young and exciting Bob Goods? The Gown staff is viewed, and I think rightly so, as being overly involved in national research and educational programs and grossly underinvolved in helping the practicing physicians understand modern scientific medicine.

When the University of Medicine Dean spoke recently at a private hospital quarterly meeting, he repeatedly told us (poor dumb LMDs) what great advances "We" (meaning the Medical School, how strange to hear such an institution referred to in the first person) were going to make in neuroscience, genetics, and oncology—and we LMDs would just be left behind. Why, the advances will come so fast; the language will change; and we won't even be able to read the journals. But not once did he say, "We're going to *teach* you. We're going to *help* you. We're going to see that you don't fall behind." To many in the audience it sounded more like Krushchev at the U.N.—"We're going to bury you."

9. And now, we see the University Hospital and the Medical School becoming a competitor—complete with slick advertising campaigns; buying interest in an HMO; and setting up satellite clinics, not for research, but to compete in the marketplace.

Battle lines are being drawn. It's time to call a truce, study the problems, and avoid any further blood-letting. (And lest you LMDs think no blood has been spilled, consider the resistance you encountered whenever you last tried to have a PHP, Group Health, Share or MedCenter patient evaluated at the University.)

The Solution—Working Together

Obviously, what's needed now is cooperation. The University needs patients. The Town doctors need help, both with their tough medical problems and with their on-going education. Let's find some way to work together, creating a pan medical community including Town and Gown speaking to each other—and speaking the same language about the same patient—to everyone's benefit. To begin with, and we must begin somewhere, I suggest the following steps, beginning with the University.

1. Have the President or Board of Regents appoint a committee of advisors (Board of Overseers)—including physicians, business people, outside educators, community leaders, etc.—to serve as an advisory committee to the Medical School. Such a group should make regular site visits for on-site inspection and should make formal, non-binding recommendations to the President of the University on changes and improvements in Medical School operations at all levels, from medical student and faculty selection, to research effort, construction programs, overall direction, etc. In other words, invite in some outside influence, and treat it with respect.

2. Appoint a committee of Town and Gown physicians and academics to meet together on a regular, frequent basis to openly discuss ways of *opening up* the University to the community and the community to the University staff. In other words, come down out of that ivory tower. It's time to destroy the tower.

3. Get rid of all the jerks in the clinical departments. (Jerk is here defined as anyone in a clinical section who looks down on, ridicules, resents, or is otherwise disrespectful of those physi-

cians who have opted to care for the sick, and who takes every opportunity to show their disrespect.) People who don't want to teach or participate in patient care, but who otherwise are important to the University for some reason, put them in some nonclinical department and let them do their thing. Make up a department if you have to. There are too many researchers masquerading as doctors. Their ignorance and/or lack of interest is readily detectable, and is an affront.

The best local clinicians simply are not going to participate in University programs while having to tolerate rude and insulting attitudes and behavior by inferior clinicians. Like it or not, this business of attitude is a major problem. It's not so hard to determine who can doctor, or who has communication skills and who doesn't. If you're not sure, ask your students and residents.

4. Get some people on your staff whose primary academic interest is medical care delivery. Start telling us how to better organize medical care. The University should be the leader in defining the appropriate medical care delivery system, not just reacting to events after they have happened. Senators Durenberger, Kennedy, et al., with a large push from business people who would reap a financial windfall by exploiting the unwary sick, must be reigned in. Or, in the event they are right supported. (DRGs may be good for the national pocket book; in my experience, it's been a disaster for the sick.)

Frankly, if the University had been doing its job, being the leader in designing the medical care delivery system, they wouldn't be in their present mess, and we wouldn't be subjected to all the whining in the press and on the air about how PHP, Group Health, Share, and MedCenters have stolen your patients and now they ought to be taxed for your benefit. Perhaps they should, but you should have said so before the milk was spilled, not after. Quit whining. Start leading.

How many doctors do we need? How many pathologists? How many proctologists? Should nurses be trained to do endoscopy? Where do we need improvement? Where can we relax? How should the state structure Medicaid, medical assistance, etc.? These things can be studied and are practical questions that the community rightly should expect the academic center to address. (And if you don't get on it soon, the St. Thomas Business School will, and you'll just have another wound to lick from having dropped another ball.)

5. Hire some clinicians. Organize a clinic of first rate clinicians who will use, at least on a part-time basis, the University facility, look after referrals and referring doctors, breach the insurance fiasco you find yourself in *via* HMOs, and provide a work-a-day clinical perspective for your students and residents. Local physicians who are well educated and motivated and who have practiced medicine full-time for 10-20 years are an untapped resource that could bring a level of skill to the Medical School that may be shocking to many on its clinical staff. There is simply no substitute for experience, and in this community, the most experienced clinicians in most fields are *not* at the University. The Duke University Clinic is one model. The Cornell and NYU clinical staffs is another. There are others. But do *something* to enhance your clinical image.

6. Look for those on your staff who have succeeded in bridging the Town-Gown problem, and clone them. May I suggest Roby Thompson, Bob Goltz, Dick Brunning, Shelly Chou, and Paul Quie as models. Build an entire staff with the likes of them, and your problems are over. Right now the Medical School has openings for department chairs in enough departments to remold its image—ob-gyn, physical medicine, neurology, dermatology, etc. Find a Roby Thompson, i.e., a gentleman and a scholar who knows how to interact with the local community, to head each department. Then stand back and watch the excitement.

Town Attitudes

7. On the Town side, some changes in attitude are needed. We treat patients, but by and large we don't teach. Teaching is time consuming and expensive. Good teachers *work* at their job, and their work is every bit as important as ours, if not (infinitely) more so. Such important work should be rewarded at an appropriate financial level. It's time we actively supported the faculty in its search for fair treatment by the various governmental funding bodies, and quit expecting these teachers to depend on patient revenue to cover their needs.

Importance of Research

Few of us are involved in research, and what research we do is rarely of great moment. We need to recognize not only that research is important, but also that it is difficult, requires specialized training, and is expensive, in both time and money. Most breakthrough research comes from a combination of training and the opportunity to explore. But the investigator must have two things that the Town rarely is able to provide: the opportunity to discuss ideas, no matter how crazy sounding, with other knowledgeable and interested scientists; and the free time to explore the idea. Free time. A luxury in our life; it's an absolute necessity for the scientist. Time to read. Time to think. Time to discuss with one's colleagues all the pitfalls of one approach versus another. And time to test. And retest. And try again.

Nurturing Research

If meaningful research is going to evolve, it's got to be nurtured. Too much emphasis is currently being placed on the patient numbers game at the University of Minnesota. If every Gown physician spends all his time seeing patients, who's going to generate the ideas and do the research we all want and expect? It's time for the Town doctors to *recognize and acknowledge* that what's going on at the University is more than patient care. Lots more. And if it is to con tinue, it needs our support.

We must help define and defend the role of the clinician-researcher, protecting them from those who would have these very special doctors spend more and more of their already limited time recruiting and seeing patients. Simultaneously, we must help them find an avenue whereby they have ample clinical material to do their research and teach their students and residents.

Town and Gown Working Together

Working together, Town and Gown can solve these problems in a way that is honorable for everyone, threatening to none. I am convinced the Town is ready, indeed eager, to participate in a *cooperative effort* to promote the University of Minnesota Medical School. But for the partnership to succeed, the operative words are *trust* and *share—cooperation.*

The Key

In the final analysis, the key to saving the University of Minnesota Medical School rests with the school. So, I address these final comments to you. Your best ally is the one you've most antagonized and avoided—local Minnesota physicians.

If you are going to get patients, they are going to come from the current patient pool. Either you are going to steal them or they are going to be referred to you. Continue with your arrogance; air your silly Rah Rah University of Minnesota ads; try to steal our patients; continue to ignore us. At best we'll simply ignore you (i.e., maintain the status quo). At worst, we'll fight you—tooth and nail. You'll lose. We'll lose. The public will lose.

On the other hand, get us involved in what you are doing; help us with our problems; teach us, so we're as smart as you. Make medical education exciting again, not just for you—for us too. That we can support—and we will. You'll win. We'll win. The public will win.

The ball's in your court. You can try to cram it down our throat. Or we can play together. The choice is yours.

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Medicare Fee Reimbursement Study
Executive Summary

Geographically based inequity in Medicare fee reimbursement was an issue addressed by the MMA House of Delegates in May of 1985. A resolution passed by the House called for the immediate implementation of a study of the prevailing Medicare fees in Minnesota to determine whether such inequities do, in fact exist, and if so, to what extent. This approach was in keeping with policy adopted by the MMA Board of Trustees in early 1985 which called for an end to the use of geographic location as a determining factor when third party payers develop reimbursement levels.

Minnesota is one of the few states served by more than one Medicare Part B (Medicare) carrier. Travelers serves eleven counties including and surrounding the Twin Cities, Blue Cross and Blue Shield serves the balance of the state; Blue Cross and Blue Shield administers three separate regions: Northern, Southern and Statewide. Reimbursement levels have been developed for some codes in each region. For other codes for which sufficient regional charge data is not available, statewide reimbursement levels have been set.

Given these two payers and four geographically based reimbursement regions, the first challenge was to devise a method to compare the Medicare prevailing rates in a way that corrected for differences in physician classification and code usage by Medicare carriers. This was done by clarifying the exact procedures used by each carrier and then developing a method for comparing like codes. Some of the differences in approach between the two carriers which required adjustments for accurate comparison were:

- Travelers converted in July of 1985, to the CPT-4 procedure code system which Blue Cross and Blue Shield uses;
- Blue Cross and Blue Shield categorizes providers into almost 50 types, based on specialty. Travelers uses six physician categories; and
- Travelers does not consider procedure code modifiers while the Blue Cross and Blue Shield system does.

Once a system was developed to accommodate the variations between the two carriers, it became necessary to identify which CPT-4 codes would be used in the comparison process. Three sets of codes were chosen for each specialty grouping:

- General medicine codes which describe frequently performed medical services;
- Codes identified by Blue Cross and Blue Shield as the most frequently used across all specialties; and
- Codes identified by physicians of each specialty as those most commonly used within that specialty for Medicare patients.

Each specialty was compared using the three subsets of the CPT-4 codes described above. The comparisons were made between Travelers' prevailing rate (for the Twin City metro area) and the Northern region, Southern region and Statewide prevailing rates used by Blue Cross and Blue Shield.

Each of the carriers determine prevailing fees in the same manner. The data element which was not available however, was the frequency with which each service was provided. This made it more difficult to assess whether discrepancies in prevailing levels for the same procedure could be attributed exclusively to geographic differences, or if utilization of the service might have skewed the prevailing reimbursement amount.

The following are the significant findings of the code review:

- Significant fee inequity by geographic region was found in virtually every specialty field and throughout most categories of procedure code;
- For the medical procedure codes (CPT-4 90000 series), Travelers' reimbursement rates are generally significantly higher than Blue Cross and Blue Shield rates, although some exceptions to this pattern were found.
- Hospital medical service codes favor outstate physicians when coding for new patients, but the advantage shifts to metropolitan physicians when established patient codes are used; and
- Prevailing charges vary significantly between the Northern and Southern Blue Cross and Blue Shield regions.

The inequities identified in this study can be remedied only by redistributing finite Medicare reimbursement dollars. With this mind, the following recommendations are made:

1. That the Medicare carrier in Minnesota, Travelers Insurance Company and Blue Cross and Blue Shield of Minnesota, be informed of this study and be requested to respond to the findings by justifying geographic distinctions which exist both between and within carrier jurisdictions and which result in discrepant Medicare prevailing charge levels.
2. That the MMA initiate educational seminars to assure appropriate and accurate use of the CPT-4 procedure coding guide by Minnesota physicians and their office staff.
3. That the MMA communicate with both the Health Care Financing Administration (HCFA) and the Minnesota Congressional delegation expressing deep concern over these findings and requesting removal of the artificial barriers based on geographic location used in determining Medicare prevailing fees.
4. That this study be referred to the MMA Board of Trustees for further review.

Minnesota Medical Association Medicare Fee Reimbursement Study

August, 1985

The issue of geographically based inequities in Medicare physician fee reimbursement is one of great concern to Minnesota physicians. Because Minnesota has one Medicare fiscal intermediary (Blue Cross and Blue Shield of Minnesota) and two Medicare carriers (BCBSM and Travelers Insurance Company), fee discrepancies within the Medicare program based on geographic boundaries have been suspected, but not well documented. (See Appendix A for map of carrier boundaries.)

This perceived geographically based inequity has been addressed repeatedly in MMA policy statements. Resolution 6 adopted by the 1984 MMA House of Delegates states:

> Resolved, that the various insurance carriers be advised to discontinue using the location of a physician's practice as a criterion in determining the amount of the reimbursement.

Further opposition to geographical fee determinants is found in the *MMA Policy on Physician Payment*, adopted by the MMA Board of Trustees in January, 1985:

> "Determination of price will not include location of a physician's practice as a criterion."

In May, 1985, the MMA House of Delegates passed Resolution #4 which called for a study of geographically based Medicare physician fee reimbursement inequities within the state's boundaries and corrective actions to eliminate inequities related by the study. (See Appendix B for the text of Resolution #4, 1985 House of Delegates.)

This report is the analysis of Medicare physician fee reimbursement by geographic region which was requested by the House in Resolution #4. Some recommendations for addressing discrepancies are provided. Some caution should be observed in evaluating the findings. Comprehensive conclusions are not possible because certain information is not generally accumulated by carriers and is, therefore, not readily available. For example, the frequency of usage of individual codes is not available, rendering any attempt to calculate an overall discrepancy futile.

In light of these deficiencies, the scope of the study was limited to procedures most frequently used, and, thus, most important to Minnesota physicians. Three sets of procedure codes were chosen for this purpose from the CPT-4 Coding Guide.

The first of these is composed of selected General Medicine 90000 series codes. The 90000 series which consists of general medical services, is used by nearly all specialties. The following code groupings are included in the analysis: Office Medical Services, Hospital Medical Services, and Emergency Department Services. (See Appendix C for complete list.) Since the selection of these codes was not based on actual frequency of usage to the extent that other sets were, the results of the 90000 series comparisons should not be weighed as heavily in reaching a conclusion.

For the second set of codes, Blue Cross and Blue Shield of Minnesota was asked to provide a list of the most frequently used codes throughout all the specialties. As expected, this list contains a preponderance of the General Medicine 90000 codes. Also included are two procedures in diagnostic radiology, one in therapeutic radiology, one in surgery, a number in pathology, and others (see Appendix C for complete list). Since the codes included in this set were, by definition, frequently used, any discrepancies found could not be attributed to obscurity or lack of carrier familiarity with the procedure. However, codes specific to individual specialties were not in this list, necessitating a third approach.

This third list consists of the most common procedures performed by each individual specialty. Unfortunately, neither the two carriers nor any other organization contacted could provide the MMA with this information. However, since this information was valuable to the scope of the study, selected clinics were asked to identify the most common procedures at their respective practices. Since this approach has an inherent possibility of inaccuracy, this third set of codes was used primarily to verify findings in the other two sets. With the exception of pathology, the lists were mostly composed of codes in the above groups. This reinforces the importance of General Medicine codes (Set 1). In the case of pathology, however, neither of the two generic lists contained common pathology codes; the list obtained from individual pathologists is the sole source of information in this field.

Taken as a composite, these three sets of procedure codes should be adequate to evaluate whether or not a significant inequity does, in fact, exist.

Before presenting the findings, a few points should be made about the fee schedules themselves. Although the two carriers organize their schedules much differently, both contain the same essential information: the 75th percentile prevailing charge. (Complete report descriptions and sample pages from both carriers' schedules are included in Appendix D.) However, the carriers' contrasting systems of categorizing specialties may be responsible for an unexpected inequity. For example, since an ophthalmologist and an orthopedic surgeon are both classified as simply "surgical specialist" under Travelers' schedules, the two physicians would receive the same reimbursement for each procedure code submitted to the metro carrier. The more specific BCBSM listings account for individual specialties. (See Appendix E for a table showing the specialty groupings by the two carriers.)

The significance of this may be recognized in examining certain codes. For example, procedure code 90080, established patient comprehensive service, would be reimbursed $49.00 to either physician by Travelers. BCBSM would pay the ophthalmologist $16.50 statewide and the orthopedic surgeon $41.30 (south) or $31.00 (north).

Lastly, the method employed by the carriers to derive their prevailing charges and the method employed by MMA staff to analyze the prevailing changes are described to enhance the reader's understanding of the problem. The following is an explanation of the reimbursement determination procedure used by both carriers. Travelers attached this description to its schedules:

> Prevailing Charge Information
> Medicare Allowable Charge Determination
> Physicians' Services
>
> Under the law, the amount allowed for a given service is the lowest of (1) the actual charge made by the provider; (2) the customary charge of the particular provider; and (3) the prevailing charge among providers in the same specialty category. For non-emergency services rendered in a hospital out-patient department that are also available in an office setting, the allowed amount cannot exceed the Out-Patient Physician Screen amount. For professional component radiology services, the allowed amount cannot exceed 40% of the prevailing charge for the total radiology procedure.
>
> A new Medicare fee screen year begins on July 1 of each year. For Fee Screen Year (FSY) 1985, which began July 1, 1984, the law requires that the same customary and prevailing data be used in determining allowances for physicians' services as were used during FSY 1984. Thus, allowances for both FSY 1985 and FSY 1984 are based on calendar year 1982 charge history. The customary charge represents the provider's charge during 1982 and is equal to the median or middle charge of all the provider's charges for a given service, arrayed from lowest to highest. The prevailing charge is equal to the 75th percentile level of all customary charges, weighted for frequency, arrayed from lowest to highest.
>
> In accordance with the 1972 Social Security Amendments, the prevailing charges for physicians' services cannot exceed Fiscal Year 1973 prevailing charges by more than 106.3%. For this reason, some prevailing charges are "adjusted" to reflect Fiscal Year 1973 prevailing charges plus the appropriate Economic Index percentage. (Clinical laboratory services, portable x-ray service, prosthetics, orthotics, medical equipment, ambulance and independent physical therapy prevailing charges are not affected by this Economic Index limitation.)

The above description noted that by law, charges for physician services cannot exceed FY 1973 charges by more than 106.3%. The character of physician practice has changed significantly since that time. Differences between practice costs in the metropolitan and outstate regions which may have existed in 1972 may or may not continue to exist. Nevertheless, this artificial "cap" on increases essentially "locks in" 1972 disparities and perpetuates them over time.

To evaluate discrepancies in the two listings supplied by the carriers, a number of comparative procedures were considered. The one selected was felt to best meet the tests of accuracy, clarity and ease of computation. Using the equation $Y = NX$ where Y is the BCBSM prevailing charge, X is the Travelers charge and N is the BCBSM coefficient value, coefficients may be found which reflect BCBSM reimbursements as a ratio of those of Travelers. With Travelers set to 1.000, a BCBSM coefficient of less than 1.000 would indicate a lower BCBSM payment and vice versa. This system provides the benefit of a consistent base, (the Travelers prevailing) eliminating the inconsistency and consequent confusion inherent in other proposed systems.

> Example: Procedure Code 90060, established patient intermediate service, submitted by a general practitioner would entail a reimbursement of $20.00 under Travelers and $12.40 under BCBSM (both regions). Plugging these values into the formula would yield a BCBSM coefficient of 0.620. As this value is less than 1.000, it indicates a lesser outstate payment. The size of the discrepancy is also apparent as the coefficient can be read as a cents on the dollar computation (sample worksheets are included as Appendix C).

Findings

Conclusions in this study are based primarily on trend analysis derived from specific instances, rather than on calculation showing an overall percent difference. With this in mind, the specific findings of this study are presented.

Consistent with the initial hypothesis, a significant geographical fee inequity was found in virtually every specialty field and throughout most categories of procedural codes. Although differences in the ten to twenty percent range were most common, figures of over 100% were found favoring one region in some instances and another region in others. On the whole, BCBSM reimbursement levels calculated in this study were markedly lower than those of Travelers. Additionally, many inequities also were found in the levels paid to physicians in the regions covered by BCBSM.

While Travelers reimbursement rates for the 90000 series codes are certainly significantly higher than BCBSM rates as a whole, outstate physicians consistently received greater payments for specific groups of procedure codes. Exceptions to these trends are frequent, however, and complicate explanation of the patterns. Beyond doubt, though, is the fact that fee discrepancies are large and numerous among the General Medicine Codes.

Although variances were found throughout the 90000 series, some of the widest discrepancies are in the Office Medical Services codes, the most frequently used codes in most specialties. Coefficient of less than 0.600 (BCBSM reimbursements more than 40% lower than Travelers) are not uncommon, and margins in excess of 25% are commonplace. Reflecting a pattern also found in other portions of the 9000 series, the deviation grows larger as the level of service increases. Since BCBSM prevailings often stay at the same amount even as the code indicates greater services, a possible explanation for this trend is physician inaccuracy in coding or differing opinion as to the proper correlation between procedure code and service performed. Also, the previously mentioned hypothesis regarding the 1973 Social Security amendment may apply here, thus resulting in a situation where vast inequity has become an ingrained part of the fee reimbursement system in Minnesota. Regardless of causality, the implications of wide discrepancies in these heavily used codes must be recognized.

The Hospital Medical Services reimbursement ceilings actually favor outstate physicians serving new patients. However, the ceilings favor metro physicians when established patients are involved. Throughout most specialty fields, BCBSM prevailing ratios are actually higher than Travelers' in lower level, new patient services. Established patient prevailing rates, however, are similar in discrepancy to those described in Office Medical Services codes.

The last category, Emergency Department Services, at least offers consistency. In nearly every field utilizing these codes, lower level services are compensated at higher rates by BCBSM than Travelers; higher level services are compensated in an opposite fashion.

Overall, reimbursement levels for the General Medical Service codes (the 90000 series) is largely discrepant and lacks any definitive pattern by geographic area.

Most Frequently Used Codes Across Specialties

The results of comparisons in the second set of codes, the most frequently used procedure codes by all specialties, is largely redundant due to the large proportion of General Medical Service codes. However, this comparison confirmed that extensive inequity exists in heavily used codes and allowed further study of other common codes.

Representative codes of three categories of General Medical Services are included in this set: 90340, Skilled Nursing, Intermediate Care, and long-term care facilities; 90440, 90450, and 90460, Nursing Home, Boarding Home, Domiciliary, or Custodial Care Medical Services; 90600, 90610, 90620, Consultations. The first two categories continue to show a significant discrepancy, with Travelers reimbursing at a higher rate. The third category is nearly neutral as a whole, due to equally large discrepancies which occur either way.

The only other codes which encompass an ample number of specialties are electrocardiograms: 70010 and 70020. While often slightly higher in the BCBSM regions, the prevailings for these codes are not significantly discrepant.

Specialty Specific Codes

Since the two generic lists specifically exclude pathology, results of the specialty specific inquiries for pathology are given here. Of the 22 procedure codes obtained from a metro and an outstate pathologists, only eight yielded data from both Travelers and BCBSM prevailing lists. Of these eight, most coefficients fell within a ten percent deviation. Those that did not were balanced in their departure from the norm. On the whole, a significant discrepancy was not found.

Discrepancies between Northern and Southern BCBSM Region

Although this issue was not addressed in each specific procedure code category, prevailing charge discrepancy is also significant between the two BCBSM regions. As the northern region contains the relatively large health care centers of Duluth and St. Cloud, the finding of a discrepancy to the detriment of the southern region, which has much smaller health care centers, was not surprising. In fact, this lends further credence to the charge that the Medicare carriers in Minnesota are following a policy of inequity in fee reimbursement along geographic boundaries. Specifically, the carriers are reimbursing providers in highly populated areas at a significantly higher rate than rural and small city physicians.

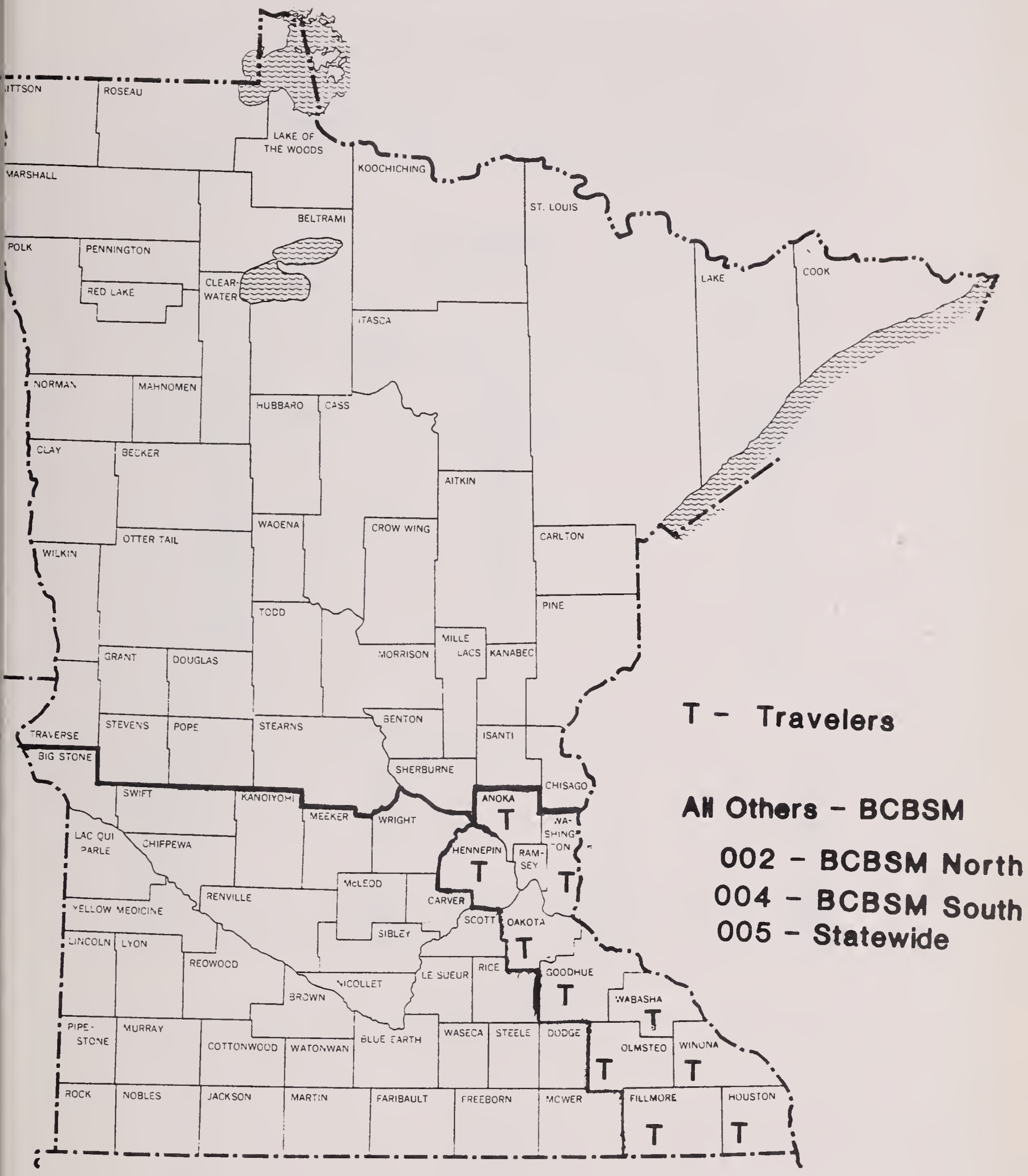
Conclusion

Although only a limited review was possible because of data availability problems, the study did result in the identification of specific concerns which require further review, explanation, or evaluation. These concerns include fee schedule variations and different specialty groupings by the two carriers, as well as variations in procedure code usage.

In order to address the concerns identified in this limited study, the following recommendations are made:

1. That the Medicare carriers in Minnesota, Travelers Insurance Company and Blue Cross and Blue Shield of Minnesota, be informed of this study and be requested to respond to the findings by justifying geographic distinctions which exist both between and within carrier jurisdictions and which result in discrepant Medicare prevailing charge levels.
2. That the MMA initiate educational seminars to assure appropriate and accurate use of the CPT-4 procedure coding guide by Minnesota physicians and their office staff.
3. That the MMA communicate with both the Health Care Financing Administration (HCFA) and the Minnesota congressional delegation expressing deep concern over these findings and requesting removal of the artificial barriers based on geographic location used in determining Medicare prevailing fees.
4. That this study be referred to the MMA Board of Trustees for further review.

APPENDIX A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KOOCHICHING
MARSHALL
ST. LOUIS
BELTRAMI
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COOK
RED LAKE
CLEAR-WATER
ITASCA
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All Others - BCBSM
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WRIGHT
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LAC QUI PARLE
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HENNEPIN
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RAM-SEY
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002 - BCBSM North
McLEOD
004 - BCBSM South
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APPENDIX B

1985 Minnesota House of Delegates Resolution 6:

RESOLVED, that the Minnesota Medical Association take immediate and vigorous action to determine the extent of Medicare physician fee reimbursement inequity within the boundaries of Minnesota; and be it further

RESOLVED, that in the interest of all Medicare recipients and physicians statewide, the Minnesota Medical Association provide the highest priority of its staff and resources to eliminate any Medicare reimbursement inequity based on geographic boundaries within the state.

APPENDIX C

Below are complete listings of the procedure codes in the first two sets of codes used in the study:

GENERAL MEDICINE 90000 SERIES

Office Medical Services	*Hospital Medical Services*	*Emergency Department Services*
90000	90200	90500
90010	90215	90505
90015	90220	90510
90017	90240	90515
90020	90250	90517
90030	90260	90530
90040	90270	90540
90050	90280	90550
90060		90560
90070		90570
90080		

Most Frequently Used By All Specialties

90010
90015
90040
90050
90060
90080
90200
90215
90220
90240
90250
90260
90340
90440
90450
90460
90550
90844
45300
93010
90600
90610
90620
71010
71020
80019
81005
82270
84132
85580
87080
77405

APPENDIX D
BLUE CROSS BLUE SHIELD OF MINNESOTA REPORT DESCRIPTION

Below is an explanation of the columns displayed from left to right on the report:

1. Area 005 - Statewide
   002 - Northern Minnesota
   003 - Southern Minnesota
2. Specialty - Numeric code indicating specialty.
3. TOS/BOS - Indicates the type of service corresponding to the procedure code.
4. PROC - CPT-4 procedure code.
5. FEE/CF/50 - The 50th percentile of prevailing built on customary allowances of all physicians/suppliers in the physician's area and specialty.
6. FEE/CF/75 - The 75th percentile of prevailing built on customary allowances of all physicians/suppliers in the physician's area and specialty.
7. SOURCE - For internal purposes only. Please disregard.
8. PROCEDURE DESCRIPTION - Narrative description of the procedure code.

BCBSM allows at the lower of the charge on the bill, the physician's customary, or the prevailing 75th percentile. In the absence of a customary for a specific code, BCBSM allows at the lower of the billed amount, the 50th or 75th percentile. New providers who have not accumulated enough charge data are reimbursed according to the lower of the billed amount or 50th percentile.

BCBSM TYPE OF SERVICE CODES (TOS/BOS)

B - professional component x-ray
O - professional component on diagnostic lab
Q - technical only, x-ray
N - outpatient psychiatry
V - vaccine
D - independent practicing physical therapist

1 - medical services
2 - surgical
3 - consultation
4 - total procedure on x-ray; with technical, etc.
5 - lab
6 - radiation therapy
7 - anesthesia
9 - supplies

NOTE: CPT code modifier-26, as used on the Travelers prevailing schedules, corresponds with BCBSM TOS/BOS code 'B'. Blue Cross Blue Shield Report Description August 7, 1985 Page 3

CODING PHYSICIAN SPECIALTY

For each summary record prepared the carriers must code the specialty of the physician rendering services. The 2-digit codes used are:

Code	*Specialization*
01	General Practice
02	General Surgery
03	Allergy
04	Otology, Laryngology, Rhinology

Appendix D (continued)

Code	*Specialization*
05	Anesthesiology
06	Cardiovascular Disease
07	Dermatology
08	Family Practice
09	Gynecology (Osteopaths only)
10	Gastroenterology
11	Internal Medicine
12	Manipulative Therapy (Osteopaths only)
13	Neurology
14	Neurological Surgery
15	Obstetrics (Osteopaths only)
16	OB - Gynecology
17	Ophthalmology, Otology, Laryngology Rhinology (Osteopaths only)
18	Ophthalmology
19	Oral Surgery (Dentists only)
20	Orthopedic Surgery
21	Pathologic Anatomy; Clinical Pathology (Osteopaths only)
22	Pathology
23	Peripheral Vascular diseases or Surgery (Osteopaths only)
24	Plastic Surgery
25	Physical Medicine and Rehabilitation
26	Psychiatry
27	Psychiatry, Neurology (Osteopaths only)
28	Proctology
29	Pulmonary Diseases
30	Radiology
31	Roentgenology, Radiology (Osteopaths only)
32	Radiation Therapy (Osteopaths only)
33	Thoracic Surgery
34	Urology
35	Chiropractor, licensed (effective July 1973)
36	Nuclear Medicine
37	Pediatrics
38	Geriatrics
39	Nephrology
40	Hand Surgery
41	Optometrist - effective July 1, 1981 (services related to condition of aphakia)
48	Podiatry - Surgical Chiropody
49	Miscellaneous
70	Clinic or other group practice, except GPPP
99	Unknown

Information on physician specialty is available from directories issued by the American Medical Association, American Osteopathic Association, and State and local medical societies.

Physicians are considered specialists if they consider themselves specialists and so classify themselves, regardless of whether or not they are certified by specialty boards or eligible for certification. For physicians with more than one specialty, enter the major specialty of the physician on all his submitted summary records. Do not vary the specialty code with the different types of service reported by that physician.

APPENDIX E

Travelers Prevailing Specialty Grouping
Prepared 7/10/78

Travelers Specialty	*BCBSM Specialty*	*Description*
96	05	Anesthesia
General Practice		
91	01	General Practice
	12	Manipulative Osteopathy
	48	Podiatry
Surgical Specialists		
92	02	General Surgery
	04	Otology, Laryngology, Rhinology
	07	Dermatology
	09	Gynecology (Osteopaths only)
	14	Neurological Surgery
	16	Obstetrics and Gynecology
	17	Opthalmology, Otology, Laryngology, Rhinology (Osteopaths only)
	18	Ophthalmology
	19	Oral Surgery
	20	Orthopedic Surgery
	23	Peripheral Vascular Disease or Surgery (Osteopaths only)
	24	Plastic Surgery
	28	Proctology
	33	Thoracic Surgery
	34	Urology
Non-Surgical Specialists		
93	03	Allergy
	06	Cardiovascular Disease
	08	Family Practice
	10	Gastroenterology
	11	Internal Medicine
	13	Neurology
	25	Physical Medicine and Rehabilitation
	26	Psychiatry
	27	Psychiatry and Neurology (Osteopaths only)
	29	Pulmonary Disease
	37	Pediatrics
	38	Geriatrics
	39	Nephrology
Pathology Specialists		
94	21	Pathologic Anatomy; Clinical Pathology (Osteopaths only)
	22	Pathology
Radiological Specialists		
95	30	Radiology
	31	Roentgenology, Radiology (Osteopaths only)
	32	Radiation Therapy (Osteopaths only)

MEDICARE FEE REIMBURSEMENT

Travelers Report Description

Prevailing Charge Information

Medicare Allowable Charge Determination

Physicians' Services

Under the law, the amount allowed for a given service is the lowest of (1) the actual charge made by the provider; (2) the customary charge of the particular provider; and (3) the prevailing charge among providers in the same specialty category. For non-emergency services rendered in a hospital outpatient department that are also available in an office setting, the allowed amount cannot exceed the Outpatient Physician Screen amount. For professional component radiology services, the allowed amount cannot exceed 40% of the prevailing charge for the total radiology procedure.

A new Medicare fee screen year begins on July 1 of each year. For Fee Screen Year (FSY) 1985, which began July 1, 1984, the law requires that the same customary and prevailing data be used in determining allowances for physicians' services as were used during FSY 1984. Thus, allowances for both FSY 1985 and FSY 1984 are based on calendar year 1982 charge history. The customary charge represents the provider's charge during 1982 and is equal to the median or middle charge of all the provider's charges for a given service, arrayed from lowest to highest. The prevailing charge is equal to the 75th percentile level of all customary charges, weighted for frequency, arrayed from lowest to highest.

In accordance with the 1972 Social Security Amendments, the prevailing charges for physicians' services cannot exceed Fiscal Year 1973 prevailing charges by more than 106.3%. For this reason, some prevailing charges are "adjusted" to reflect Fiscal Year 1973 prevailing charges plus the appropriate Economic Index percentage. (Clinical laboratory services, portable x-ray services, prosthesis, orthotics, medical equipment, ambulance and independent physician therapy prevailing charges are not affected by the Economic Index limitation.)

Explanation of Printout Data

The Area Prevailing by specialty file lists the prevailing charges developed from the pooling of al providers' customary charge data within certain specialty categories. The specialty codes and categories are:

35	Chiropractors
89	Independent Laboratories
91	General Practitioners; Podiatrists; Osteopaths
92	Surgical Specialists
93	Non-Surgical Specialists
94	Pathologists
95	Radiologists
96	Anesthesiologists

Each page of the printout is arranged in columns of information labeled and defined as listed below.

Procedure Code:

The 5-digit code assigned to the particular procedure in the Health Care Financing Administration Common Procedure Coding System (HCPCS).

(continued)

Travelers Report Description (continued)

MIM2:
Modifier 26 represents the professional component of a diagnostic procedure.

50th Prev:
The 50th percentile prevailing level is the 50th percentile of the weighted customary charge and is not affected by the Economic Index. If a provider does not have a customary charge for a given procedure, the 50th prevailing is used in lieu of an actual customary charge.

75th Prev. Adj:
The 75th percentile prevailing adjusted level is the maximum allowance that can be made and may have been affected by the Economic Index.

75th Prev. Unadj:
The 75th percentile prevailing unadjusted level is the actual 75th percentile of the weighted customary charges, prior to application of the Economic Index. This amount is not used in the pricing of Medicare claims and does not reflect corrections made subsequent to initial calculations.

Procedure Description:
The verbal description of the service as it appears in the Travelers Coding Guide.

NOTE: Effective with dates of service on and after July 1, 1984, allowances for clinical laboratory services are based on the lower of the submitted charge and a "fee schedule" amount. This fee schedule amount is calculated on the basis of 60% of the FSY 1985 75th percentile prevailing charge, derived from calendar year 1983 charge history. Because prevailing charge data are not a factor in determining allowances for clinical laboratory services, these services do not appear on the specialty prevailing printouts. These data can be found in the "75th adj." column of the Area CW - Specialty CW printout for FSY 1985.

We hope this information provided is helpful to you. If questions arise concerning its use, please contact:

Provider File Department
Medicare B
Travelers Insurance Company
8120 Penn Avenue South
Bloomington, MN 55431

Phone Number: 884-7111

APPENDIX F

MEDICARE PROCEDURES

SPECIALTY	PROCEDURE CODE	TRAVELERS	BCBSM Region #2 Northern	BCBSM Region #4 Southern	BCBSM Region #5 Statewide	Region #2 Coeffieient Northern	Region #4 Coefficient Southern	Region #5 Coefficient Statewide
18 (92)	90000	$ 16.30			$ 12.40			0.761
ophthalmology	90010	24.80		$ 17.00	12.40		0.708	0.500
	90015	30.90			14.40			0.466
90000 series	90017	49.00			14.40			0.294
(page 1)	90020	49.00			28.00			0.571
	90030	12.00			14.40			1.200
	90040	16.30			12.40			0.761
	90050	16.30			12.40			0.761
	90060	24.80			14.40			0.581
	90070	30.90		25.40	14.40		0.822	0.466
	90080	49.00			16.50			0.337
	90200	25.00			31.00			1.240
	90215	37.20			50.00			1.344
	90220	59.70			61.90			1.037
	90240	20.70			16.50			0.797
	90250	20.70			16.50			0.797
	90260	25.00			23.90			0.956
	90270	25.00			23.90			0.956
18 (92)	90280	37.20			23.90			0.642
ophthalmology	90500	16.50			22.00			1.333
	90505	16.50			22.00			1.333
90000 series	90510	30.00			22.00			0.733
(page 2)	90515	35.00			22.00			0.629
	90517	60.00			22.00			0.367
	90530	16.50			22.00			1.333
	90540	16.50			22.00			1.333
	90550	16.50			22.00			1.333
	90560	30.00			22.00			0.733
	90570	35.00			22.00			0.629
18 (92)	90010	24.80		17.00	12.40		0.708	0.500
ophthalmology	90015	30.90			14.40			0.466
	90040	16.30			12.40			0.761
	90050	16.30			12.40			0.761
Most Frequently	90060	24.80			14.40			0.581
used—all	90080	49.00			16.50			0.337
specialties	90200	25.00			31.00			1.240
(page 1)	90215	37.20			50.00			1.344
	90220	59.70			61.90			1.037
	90240	20.70			16.50			0.797
	90250	20.70			16.50			0.797
	90260	25.00			23.90			0.956
	90340	20.70			12.40			0.599
	90440	16.30			12.40			0.761
	90450	16.00			12.40			0.775
	90460	26.67			28.50			1.069
18 (92)	90550	16.50			22.00			1.333
	90844							
	45300							

(continued)

MEDICARE PROCEDURES (continued)

SPECIALTY	*PROCEDURE CODE*	*TRAVELERS*	*BCBSM Region #2 Northern*	*BCBSM Region #4 Southern*	*BCBSM Region #5 Statewide*	*Region #2 Coefficient Northern*	*Region #4 Coefficient Southern*	*Region #5 Coefficient Statewide*
Most frequently used-all specialties (page 2)	93010							
	90600	30.90			20.60			0.667
	90610	51.00			40.00			0.784
	90620	75.00			47.70			0.636
	71010	24.80			26.00			1.048
	71020							
	80019							
	81005							
	82270							
	84132							
	85580							
	87080							
	77405							
18 (92) ophthalmology	90060	24.80			14.40			0.580
	90040	16.30			12.40			0.763
	92004	36.00			34.80			0.966
	90030	12.00			14.40			1.200
	92083				23.90			
	92250	17.00			22.00			1.294
Most frequently used—sampling	76516	139.00			39.00			0.280
	66920	928.20			825.20			0.889
	66980	1405.70			1279.10			0.909
	65850	721.90						
	67226	412.60			400.00			0.969
	67515	38.00			75.00			1.973
	X0112							

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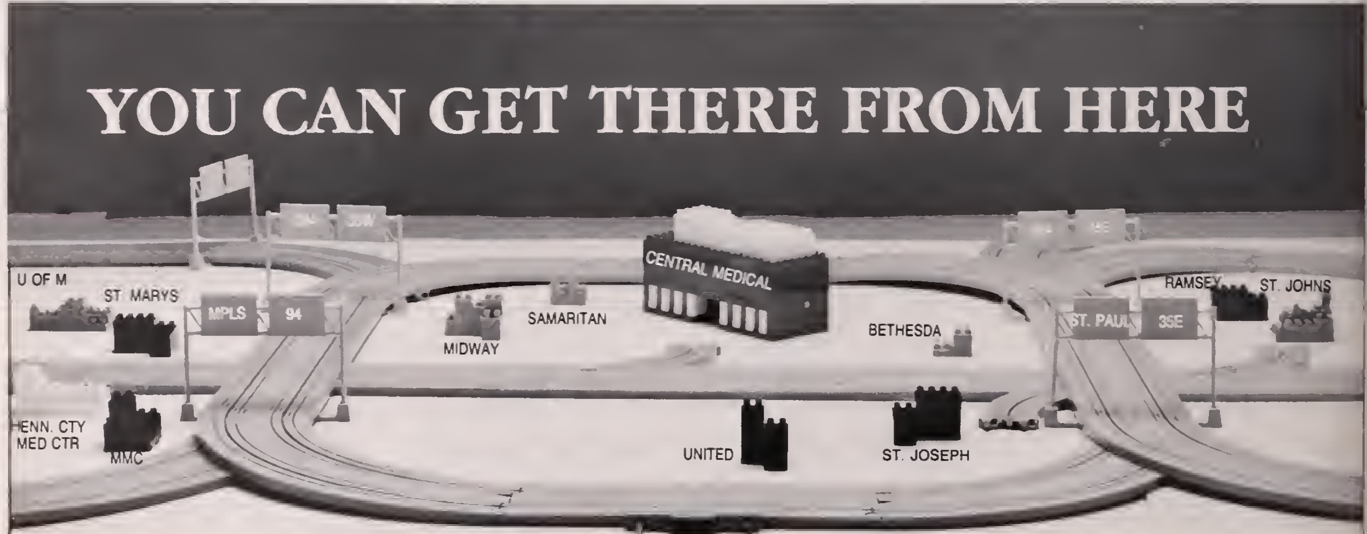

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Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

JANUARY, 1986

11 **Recent Advances in Neuropsychiatry** Minnesota Psychiatric Society, St. Paul Hotel, St. Paul, CONTACT: Maurice Dysken, M.D., V.A. Medical Center, GRECC-11G, 54th Street and 48th Avenue South, Minneapolis, Minnesota 55417. 612/725-6767, X 6313.

17-18 **Cardiology Update**; Abbott Northwestern Hospital; Holiday Inn, Alexandria; Contact; Sarah Ventres, Education Department, Abbott Northwestern Hospital; 800 East 28th Street, Minneapolis, Minnesota 55407; (612) 874-4300.

27-31 **Current Concepts in Cardiovascular Diseases** Mayo Clinic/Mayo Foundation; Maui Marriott Resort, Lahaina, Maui, HI. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, Southwest, Rochester, MN 55905; 507/284-2085.

FEBRUARY, 1986

3-7 **Dermatology Update** Mayo Clinic/Mayo Foundation; Hyatt Orlando, Orlando, Florida. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

5-7 **Telemark Cancer Conference** The Duluth Clinic, Ltd.; Telemark Lodge, Cable, Wisconsin; CONTACT: James G. Brueggemann, M.D., 400 East Third Street, Duluth, Minnesota 55805; 218/722-8364.

9-13 **Clinical Anesthesia - State of the Art** Mayo Clinic/Mayo Foundation; Iron Horse Resort Retreat, Winter Park, Colorado. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284/2085.

10-14 **Postgraduate Course in Pulmonary Allergy and Infectious Disease**; Mayo Clinic/Mayo Foundation; Buena Vista Palace Hotel, Florida; CONTACT: William L. Nietz, Mayo Clinic, 200 First Street, SW, Rochester, Minnesota 55905 (507) 284-2085.

12 **Congestive Heart Failure** CME, University of Minnesota; Radisson University Hotel, Minneapolis; CONTACT: Office of CME, University of Minnesota, Box 293 Mayo, 420 Delaware Street, SE, Minneapolis, Minnesota 55455; 612/373-8012

16-21 **Laryngectomee Rehabilitation Seminar** Mayo Clinic/Mayo Foundation; Ala Moana Americana, Honolulu, HI. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

20-21 **Current Concepts in Perinatal Medicine** St. Paul-Ramsey Medical Center; Holiday Inn-Town Square, St. Paul. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

20-27 **Euro-American Conference of Anesthesiology: Views for Today and Tomorrow** Academic Hospital Affiliates; Kauai, Hawaii. CONTACT: Roy Cucchiara, M.D., 200 First Street Southwest, Rochester, Minnesota 55905. 507/285-5601.

24-28 **Internal Medicine Meeting - Endocrinology/Nephrology/Hypertension** Mayo Clinic/Mayo Foundation; Hilton Beach and Tennis Club, San Diego, California. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

26-27 **Drug Therapy Symposium VII** Office of CME, University of Minnesota; Radisson Hotel, St. Paul; CONTACT: Office of CME, University of Minnesota, Box 293 Mayo, 420 Delaware Street, SE, Minneapolis, MN 55455; 612/373-8012.

MARCH, 1986

3-7 **Current Perspectives in Critical Care Medicine** Mayo Clinic/Mayo Foundation; Turtle Bay Hilton Country Club, Oahu, HI. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

5-8 **Fourth Annual Critical Care Conference** St. Paul-Ramsey Medical Center; Holiday Inn-Town Square, St. Paul. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

8-12 **Electrodiagnosis of Neurologic Diseases** Mayo Clinic/Mayo Foundation; Mayo Clinic, Rochester, Minnesota 55905. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55901. 507/284-2085.

10-12 **Bone & Soft Tissue Tumors** Mayo Clinic/Mayo Foundation; Del Coronado Hotel, San Diego, CA; CONTACT: William L. Nietz, Mayo Clinic 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

15-22 **Symposium on Health Care for the Elderly**; Minnesota Medical Association; Kauai Hilton, Kauai, HI. CONTACT: Eugenia C. Kassar, MMA, 2221 University Ave. S.E. - Suite 400, Minneapolis, MN 55414. 612/378-1875.

17-19 **Urology Update** Mayo Clinic/Mayo Foundation; Sawgrasss Resort, Ponte Vedra Beach, FL. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

(March continued)

21-22 Seventh Annual Update: Occupational Medicine. St. Paul-Ramsey Medical Center; Holiday Inn-Town Square. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

APRIL, 1986

4 Duluth Heart Conference The Duluth Clinic, Ltd.; Fitger "Spirit of the North" Theater, Duluth; CONTACT: James G. Brueggemann, M.D., 400 East Third Street, Duluth, Minnesota 55805; 218/722-8364.

5 Minnesota Society of Anesthesiologists Spring Scientific Meeting Minnesota Society of Anesthesiologists; Marriott, Bloomington, Minnesota. CONTACT: Peter A. Southorn, MBBS, 200 First Street Southwest, Rochester, Minnesota 55905. 507/286-8766.

10-11 Gynecology Update St. Paul-Ramsey Medical Center; Holiday Inn-Town Square, St. Paul, Minnesota. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

11-12 9th Annual Update in Practical Cardiology Abbott Northwestern Hospital, Abbott Northwestern Hospital. CONTACT: Sarah Ventres, Ed. Dept., Abbott Northwestern Hospital, 800 E. 28th Street, Minneapolis, Minnesota 55407. 612/874-4300.

14-15 Current Concepts in Refractive Surgery CME, Medical School, University of Minnesota; Holiday Inn Downtown, Minneapolis; CONTACT: Office of CME, University of Minnesota, Box 293 Mayo, 420 Delaware Street SE, Minneapolis, Minnesota 55455; 612/373-8012.

18 ENT Update St. Joseph's Hospital; 69 West Exchange Street, St. Paul, Minnesota. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

24-25 Pediatric Days Mayo Clinic/Mayo Foundation, Mayo Clinic, Rochester, Minnesota. CONTACT: William L. Nietz, Mayio Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

April 28-May 2 Practice of Internal Medicine Mayo Clinic, Mayo Foundation, Mayo Clinic, Rochester, Minnesota. CONTACT: William L. Nietz, Mayo Clinic, 200 First Street Southwest, Rochester, Minnesota 55905. 507/284-2085.

MAY, 1986

15 Changing Profiles in Clinical Toxicology. St. Paul-Ramsey Medical Center, Hennepin County Medical Center, Minneapolis. CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, Minnesota 55101. 612/221-3980.

July 31-August 2, 1986 Third Annual St. Paul-Ramsey Trauma Conference; St. Paul-Ramsey Medical Center, Fox Hills Resort, Mishicot, WI: CONTACT: Ruth McIntyre, 640 Jackson Street, St. Paul, MN 55101; 612/221-3980.

For further information on *future* CME programs, contact CME and Meeting Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

Sixth Annual Medical Ski Conference

"Diagnostic Dilemmas - The Approach and the Answsers" is the course to be held March 2-7, 1986, at the Keystone Lodge, Keystone, Colorado.

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Contact: Marge Adey, University of Nebraska Medical Center, Center for Continuing Education, 42nd and Dewey Avenue, Omaha, Nebraska 68105. Phone: (402) 559-4152.

Cover Slides for Minnesota

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Bruce Nydahl, M.D.
Cover Editor

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Ophthalmologist, Cardiologist/Internist Specialty positions available with Mankato Clinic, Ltd. Excellent group practice opportunity in All-American city with full hospital services. Full range of group fringe benefits, including liberal time off. Salary first year; incentive pay thereafter. For more information, call R.F. Roskens, Administrator or B.C. McGregor, M.D. (507) 625-1811.

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Internist - East Range Clinics, Ltd. seeks an Internist with special interest in cardiology, pulmonary medicine or intensive care. Opportunity to enter established practice with progressive multispecialty group of 26 physicians including five Internists. Unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, MN 55792, (218) 741-0150.

St. Cloud Family Practice Join 5½ Family Practice Physicians and other supportive primary care staff to provide quality care in an innovative prepaid plan. Area has three colleges and is 70 miles from the Twin Cities. Full scope of Family Practice including OB/GYN and Pediatrics and an excellent benefit package. Contact Dr. Gary Strandemo, Central Minnesota Group Health Plan, 1245 15th Street North, St. Cloud, Minnesota 56301. (612) 253-5220

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Family Physician - Join a progressive medical community in providing medical services to the Sebeka community in central Minnesota. Beautiful area, great community for raising family. Details, contact James G. Lawson, Administrator, Tri-County Hospital, Wadena, MN 56482, (218) 631-3510.

Suburban F.P. Group - SHARE affiliate - seeks associate to service rapid practice growth - competitive salary and benefits - unique opportunity to establish your practice - contact Gloria M. Vierling, Sundance Medical Clinics, LTD., 323 Naumkeag St., P.O. Box 9, Shakopee, MN 55379, (612) 445-6440.

Gastroenterologist or Internist with subspecialty interest in gastroenterology (have all the equipment). Obstetrician/Gynecologist, General Surgeon, Internist, Family Practice in 18 physician multispecialty group located in ideal community of 26,000. Ninety minutes from Twin Cities, excellent schools, etc. The clinic is a modern, well equipped facility providing attractive guarantee and early partnership, plus other excellent benefits. Contact Richard W. Golly, Austin Medical Clinic, P.A., 101 N.W. 14th Street, Austin, MN 55912, (507) 433-7351.

Emergency Medicine - Emergency physicians needed to staff clinic and hospital emergency room. Multispecialty group located in ideal area 90 minutes from Minneapolis/St. Paul, excellent schools, etc. 132 bed-hospital has an active educational program including ACLS. Contact Richard Golly, Austin Medical Clinic, 101 14th Street, N.W., Austin, Minnesota 55912. (507) 433-7351.

Family Practice - Associate needed to join 4-man group, all ABFP, one member leaving soon due to health and family reasons. 65 miles North of Minneapolis, city of 2200. Trade area of 10,000. Excellent 40-bed hospital. Regular specialty consults at clinic and hospital, and all new diagnostic facilities available on site. Top school system and recreational activities. Contact Keith Clinic, P.A.; 160 SW Second Avenue; Milaca, Minnesota 56353, or call collect, (612) 983-6101.

Minnesota, Duluth: Emergency Medicine Physician wanted to fill vacancy in St. Luke's Hospital EMS Regional Trauma Center, with 19,000 annual ED volume. Fee-for-service corporation with negotiable first year salary and then full partnership. Prefer physician ABEM certified or eligible with interest in teaching in local ATLS, ACLS, and FP residency. Send CV to Physicians Emergency Service, Ltd.- 915 E. 1st St., Duluth, Minnesota, 55805. (218) 726-5212.

Psychiatrist to join progressive multi-specialty group of 61 physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Send curriculum vitae and references to ATTN: John P. Merickel, M.D., 101 Willmar Avenue, Willmar, MN 56201.

Family Physician Or General Internist needed for an established primary care clinic of four Family Physicians and a General Surgeon. Guaranteed first year salary with benefit program. Located in a small town on the beautiful north shore of Lake Superior (service area population of 12,000) only 22 miles from Duluth which provides excellent referral and continuing education resources. Call collect (218) 834-2171 or write Steve Bjorum, Executive Director, Community Health Center, Inc., 4th Street at 11th Avenue, Two Harbors, MN 55616.

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Internist Wanted to join a 17 physician multispecialty group in Robbinsdale, Minnesota. Located next to the North Memorial Medical Center. Excellent group practice opportunity, full range of group fringe benefits. Clinic also has two additional satellite offices located in Maple Grove and Osseo. Clinic also is a provider for SHARE HMO, and soon to return as a provider for Physicians Health Plan HMO. Please contact the administrator at North Clinic, P.A., 3210 Lowry Avenue North, Robbinsdale, Minnesota 55422. Telephone 612-588-4625.

OB-Gynecologist Extraordinary opportunity to develop a thriving OB-GYN practice in a small community of 7,000 population located 60 miles west of Minneapolis/St. Paul. Litchfield, with a 10 man physician staff supports an 85 bed acute care hospital. Income negotiable, all options open. Call collect Don Konietzko 612-693-6036 or Chuck Fuller 612-693-2655. Send CV to Don Konietzko Meeker County Hospital, Litchfield, Minnesota 55355.

Office space for rent: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician on a part-time basis for the purpose of sharing overhead expenses. Call (612) 370-0553.

Family practice opportunities — Locations are 30 minutes Southwest of Minneapolis, Minnesota. Established group needs physicians to help serve a growing region. "Convenience Care Clinic" opportunities also available. Contact Joseph Kandiko, M.D., or Mr. Michael Stein at (612) 448-2050

Family Physician - Four man Family Practice group needs to replace two leaving partners. Board eligible or certified desired. One year salary with partnership thereafter. Would also consider longterm locum tenens. Small town in Central Minnesota Lakes area. Unopposed Family Practice Clinic, 150 bed Regional Hospital at Brainerd, 100 bed Nursing Home, rotate calls. Call or write C. R. Pelzl, M.D., Pine River Medical Clinic, Pine River, MN 56474. (218) 587-4416.

East Range Clinics, Ltd. seeks physicians in the following specialties: obstetrics/gynecology, orthopedic surgery, ophthalmology, and internal medicine (with interest in cardiology, intensive care, or pulmonary medicine). Opportunity to enter established practice with progressive multispecialty group of 26 physicians; unlimited opportunity for outdoor recreation. Contact Gary Lishinski, Administrator, East Range Clinics, Ltd., 910 North Sixth Avenue, Virginia, Minnesota 55792. (218) 741-0150.

Family Physician needed to replace retiring partner in thriving 3-F.P. full service practice in Starbuck, Minnesota (home of the world's largest lefse) on the thirteenth largest lake in Minnesota. Modern eight-year-old hospital. Good hunting and fishing. Twenty miles from University campus. Call Dr. Bosl or Dr. Bucher at (612) 239-2231 for further information on this desirable practice opportunity.

For Sale Laboratory equipment. Audiometer, Tympanometer, flame photometer, fibrometer for Protimes, spectrophotometer, incubator, hycell-counter, WBC etc. 612-237-2262, evening.

Wanted Board Certified Internist to practice in community in Central Minnesota located 60 miles west of Minneapolis/St. Paul. Work with 10 man medical staff in hospital clinic setting. No initial investment. Income negotiable, all options open. Call collect Chuck Fuller 612-693-2655 or Don Konietzko 612-693-6036 or send CV to Don Konietzko, Meeker County Hospital, Litchfield, Minnesota 55355.

PROFESSIONAL CORPORATION PENSION and profit sharing plans. Are you getting ready to amend your individually designed pension, profit sharing, 401(k) or cafeteria benefit plan to comply with the new federal laws: TEFRA, REA and DEFRA? Our firm provides legal assistance with plan amendments, design, forms and administration. We quote all fees in advance and for plan amendments, our fee quote covers one year of fees. Contact Roy B. Stromme, attorney, Poindexter Jacobson Stromme & Harwood, 2550 Multifoods Tower, Minneapolis, MN, 55402, (612) 340-0234.

Staff Physician -Willmar State Hospital, A JCAH accredited 642-bed hospital serving the mentally retarded, mentally ill, and chemically dependent, has a salaried position for a staff physician. Willmar is a growing city of 20,000 in the Minnesota lake country 90 miles west of Minneapolis/St. Paul. Excellent benefits, stable work environment, competitive salary commensurate with qualifications. Please send indication of interest to Lester E. Johnson, CEO, Willmar State Hospital, Box 1128, Willmar, Minnesota, 56201. Equal opportunity/ affirmative action employer.

Family Physician and Internist needed for growing southern Minnesota clinic. Associate, solo or locum tenens position available. Will adjust to accommodate. St. James Area Family Clinic, Box 471, St. James, 56081. (507) 375-3391.

Growing Multi-Specialty Clinc is looking for two Family Practitioners. One to staff a three-person Walk-in Department and the other to function in a traditional family practice setting located in north-central Wisconsin. New facility situated across the street from new hospital. Full partnership in two years. Easy access to lakes, woods and mountains. Write including CV to D.K. Aughenbaugh, M.D., Medical Director, Wausau Medical Center, 2727 Plaza Drive, Wausau, Wisconsin 54401.

Family Physician - Two physicians to join existing two physician group one hour from Minneapolis/ St. Paul. Generous first year salary guarantee with ownership possibility. Contact: W.S. Youngquist, 9500 Collegeview Road, #212, Minneapolis, Minnesota 55437.

Family Practice Physician needed to fill in for vacationing physician, March 11th thru March 20th. Weekdays 10 a.m.-5 p.m., no weekends! Minneapolis area. Contact John R. Mach, Sr., M.D. (612) 788-9258.

Immediate Opening- Family Practitioner River Valley Medical Center is seeking two family practice Board eligible/certified physicians for its multispecialty group of 16 physicians in Northwest Wisconsin. Excellent starting salary and comprehensive fringe benefit package the first year with full group membership after one year. Attached to a progressive 90 bed hospital. We are within 45 minutes to the St. Paul/Minneapolis metropolitan area. Please contact: Dr. Carl Hansen, Recruitment Chairman or Tom Halverson, Clinic Manager, 208 Adams Street South, St. Croix Falls, Wisconsin 54024. Phone: (715) 483-3221.

Experience Board Certified family physician with an interest in general adult medicine and minor surgery needed to fill vacancy in a 17 member multispecialty group. Will work closely with and share call with general surgeons. No obstetrics. Contact R.A. Yawn, M.D. or J.J. Sieve, Administrator, Worthington Medical Center, P.A., Worthington, Minnesota 56187. (507) 372-2921.

Board Certified Internal medicine practitioner seeks board eligible/ certified internist to work with him with possible acquisition of practice in the future. Edina location. Reimbursement negotiable. Contact Jane Phillip, (C1575) Minnesota Medical Services Corporation, 2221 University Avenue Southeast, Minneapolis, Minnesota 55414.

Rice County District One hospital seeks BE/BC Pediatrics, OB/GYN and Urology Practitioners for solo practice. Financial incentives negotiable. Faribault offers a modern 99 bed hospital. 21 physicians and primary service area of 28,000. None of specialties currently practice in community. Contact Gaylord Bridge, Rice County District One Hospital, 631 Southeast First Street, Faribault, Minnesota 55021. 507-334-6451.

Family Practice Associate desired to join established Family Practice Group in central Indiana community of 50,000. Excellent facilities, comprehensive benefits, highly competative earnings. Must be Board Certified or eligible. Send Curriculum Vitae to: D. Rogers, Business Manager, Kokomo Family Care, Inc. 806 South Berkley Road, Kokomo, Indiana 46901. 317-457-8341.

General Surgeon, OB/GYN and Internal Medicine Board Certified or Eligible, to join eight doctor clinic in Cloquet, Minnesota, a community of 12,000 (30,000 service area) located 20 minutes from Duluth-Superior. Clinic facility is located one block from modern, well equipped hospital. Cloquet enjoys a stable economy (forest products). Additionally, our community is noted for its excellent school system. First year salary guaranteed, paid malpractice, health and disability insurance, vacation and study time. Contact John Turonie, Administrator, Raiter Clinic, Ltd., 417 Skyline Boulevard, Cloquet, Minnesota 55720. Telephone (218) 879-1271.

Hospital Seeks board eligible physician specializing in family practice or general practice with OB and some surgical skills. Salary negotiable. Good school system, friendly people, close to Southwest College, about two and one half hours from Twin Cities. Contact: Mrs. Sandra Weber, Community Memorial Hospital and Care Center, 812 10th Avenue, Clarkfield, Minnesota 56223. (612) 669-4421.

Practice Medicine in beautiful Lake of the Woods, Baudette Clinic is recruiting physician to join busy medical group. Set in walleye capital of the world, community of 1600, service area 6,000. New clinic attached to 34-bed hospital. For outdoors person, the perfect opportunity. Contact: Shar Ray Palm, Trinity Hospital, Baudette, Minnesota 56623. Phone (218) 634-2120.

General Surgeon/Family Practice. We are in need of qualified Family Practice/General Surgeon to cover expanding service area. Sandstone Area Hospital/Nursing Home is a 30 bed acute and 86 bed long-term care facility with a clinic located next to the facility, staffed by two full-time physicians. Sandstone is located in Northeast Minnesota's heartland providing rich recreational activities. For more information call/write James G. Blum, Administrator, Sandstone Area Hospital, 317 Court, Sandstone, Minnesota 55072. (612) 245-2212.

General Internist sought for progressive six-person clinic in northern Wisconsin. Special interest in critical care desired. Enjoyable and well established practice in stable community. Send curriculum vitae to: Don Evans, M.D., 1205 O'Day Street, Merrill, Wisconsin 54452.

The Bemidji Clinic is a 22-doctor multispecialty clinic located in the beautiful north country of Minnesota. New clinic adjacent to new hospital. Generous first year salary and fringe benefits offered. Recruiting for Board Certified or Board Eligible Family Practitioners to expand our Family Practice Department and offer opportunity of branch office practice. Contact C.C. Lowery, Clinic Administrator, at (218) 751-1280, home (218) 751-9718 or Jerry Thompson, M.D. (218) 751-1280, Home (218) 751-9437.

Rare Opportunity for an aggressive, well-trained internist to practice consultative, general internal medicine. The practice opportunity exists in a service area of 30,000 in scenic Northern Minnesota. Skills would have to include the ability to handle critically ill patients as well as supervise chronic dialysis unit and respiratory care. Join a progressive multispecialty clinic which provides ample financial rewards. Please send your curriculum vitae to: John Brust, Mesaba Clinic; 1814 14th Avenue East; Hibbing, Minnesota 55746. No phone calls please.

Internist - Nephrologist - Internist - Oncologist - sought for multispecialty group practice in Northern Minnesota. New 175 bed hospital with dialysis unit, full diagnostic services and support facilities. Nationally acclaimed school system and broad range of recreational facilities. Excellent opportunity for aggressive internist. Liberal compensation system. Excellent fringes. Telephone calls will not be accepted. Send curriculum vitae to: John Brust; Mesaba Clinic; 1814 14th Avenue East; Hibbing, Minnesota 55746.

Northern Minnesota Internist in solo practice looking for partner. Prospect should be board eligible. Community offers all specialties and appeal of sophisticated resort area atmosphere. Current physician wishes to remain confidential. Please direct inquiries to: Samuel C. Shield (C1557); Minnesota Medical Services Corporation; 2221 University Avenue, S.E.; Minneapolis, Minnesota 55414.

Arizona Based Physician Recruitment firm has opportunities coast to coast. "Professionals working with Professionals." Over 13 years experience. Call (602) 795-7474; or send CV to: Mitchell & Associates, Inc., 2761 N. Country Club Rd., Suite 202, Tucson, AZ 85716.

1986 CME Cruise/Conferences On Selected Medical Topics - Caribbean, Mexican, Hawaiian, Alaskan, Mediterranean. Seven to 12 days year-round. Approved for 20 - 24 CME Cat. I credits (AMA/PRA) and AAFP prescribed credits. Distinguished professors. Fly roundtrip free on Caribbean, Mexican and Alaskan cruises. Excellent Group fares on finest ships. Registration limited. Pre-scheduled in compliance with present IRS requirements. Information: International Conferences; 189 Lodge Avenue; Huntington Station, New York, 11746. (516) 549-0869.

Weekly Seminars - Most major ski areas, Club Med, Disney World, Cruising aboard sailboats in the Virgin Islands or a Mississippi paddlewheeler. Topic: Medical-Legal Issues. Accredited. Current Concept Seminars, Inc. (since 1980). 3301 Johnson St.; Hollywood, Florida 33021 (800) 428-6069. $175.

Pediatrician - Third BC/BE Pediatrician for current two-person department of eighteen member multispecialty group. Primary care pediatrics with active hospital practice. Contact Peggy Kulpa, M.D. or James Moore, M.D., Bloomington-Lake Clinic, 3017 Bloomington Avenue, Minneapolis, Minnesota 55407. 612 721-6511.

Neonatologist, BC/BE, to provide Level II-III neonatal care and develop neonatal transport system for progressive Upper Midwest 125 physician multispecialty clinic. 180-bed university-affiliated hospital with high risk obstetrics, neurosurgical, and cardiothoracic specialties; multiple ancillary services pertinent to neonatal care; and five associated hospitals in clinic network. Attractive community of 140,000 on North Dakota-Minnesota border offers three universities, fine cultural opportunities and close proximity to Minnesota Lake country. Competitive salary and benefits. Send CV and inquiry to: Minnesota Medicine (480), 2221 University Avenue SE, Suite 400, Minneapolis, Minnesota 55414.

Office Condominiums 4928-30 Lincoln Drive, Edina. Two medical office condominuns in central Edina location. Up to 3,000 square feet. Can be purchased separately or together. Perfect for a growing medical practice. Free parking. Priced to sell. Call Jim Moscowitz, Eberhardt Company920-9280.

For Sale: Two complete exam rooms, including: exam table, cabinets, wall desk, chair, wall mounted otoscope/ophthalmoscope and BP manometer, doctor's stool - all excellent. Also a call diverter. Inquiries to: Pequot Family Medical Clinic, P.O. Box 407, Pequot Lakes, Minnesota 56472 or (218) 568-4991.

Solo Internist desiring general internist to help in rapidly growing practice. Located on shore of Lake Michigan in Michigan's Upper Peninsula. New 107-bed acute care hospital. Campus for Michigan State College of Human Medicine. Call or write: Dennis Spender, M.D., P.C., 218 South Tenth Street, Escanaba, Michigan 49829. (906) 786-1563.

Family Physicians Board certified/board eligible. Join established multispecialty group in Twin Cities metropolitan area. Four positions available (one in Saint Paul, three in suburbs). Obstetrics required at one location. Excellent facilities and benefits. Compensation begins in high forties and is negotiable depending on experience. Contact: Paul J. Brat, M.D., Medical Director, Group Health Inc., 2829 University Avenue Southeast, Minneapolis 55414 or call 612-623-8444.

Occupational Medicine Wanted: a physician with training or interest in Occupational Medicine and medical treatment of spine disorders. Four person Orthopaedic Group planning a division of Occupational Medicine. Knowledge of Workers Compensation Laws, rehabilitative techniques, medical, physical and orthopetic treatment of work injuries helpful. Please send CV to Linda L. Thompson, 1701 Curve Crest Boulevard, Stillwater, Minnesota 55082.

Medical Office For Rent one, two, or more days a week. Fully equipped. Services of medical assistant available on part-time basis. Suitable for primary care physician, medical subspecialties, general surgeon. Located at the Metropolitan Medical Office Building. For inquiries please call John Orell 332-6278.

Internist would like to share/sublet office with full support on part-time basis. Call sharing possible. Interested in rent/lease based on usage. Prefer South Minneapolis, Southwestern suburbs. Write: Minnesota Medicine (766) 2221 University Avenue Southeast, Suite 400, Minneapolis, Minnesota 55414.

Opening for M.D, interested in Occupational Medicine. Established clinic in Minneapolis-St. Paul Location. Phone: 379 7246.

General Internist would like to assume/purchase practice in Twin Cities Metro Area. Will also consider Group/Partnership arrangement. Write: Minnesota Medicine (767) 2221 University Avenue Southeast, Minneapolis, Minnesota 55414.

Family Practitioner needed to join 11 physicians, expanding multi-specialty practice in upper Midwest. Board certified or eligible. Clinic adjoins JCAH hospital. Rural location with abundant outdoor recreational opportunities, small 4-year college. Excellent salary and benefits. Call collect (715) 532-6651 or send curriculum vitae with names of references to: Howard Chatterton, M.D., 906 College Avenue West, Ladysmith, Wisconsin 54848.

Family Physician to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a community of 4000 in Southern Minnesota with a drawing of 25,000. 43 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D.; Blue Earth Medical Center, Ltd.; 520 South Galbraith, Blue Earth, Minnesota 56013. Phone: (507) 526-7371. Personal phone: (507) 526-3177. Marjeane Werner, Clinic Administrator Phone: (507) 526-7371. Personal phone (507) 854-3682.

FAMILY PHYSICIAN needed to join a young physician in a rapidly growing practice, located in a new clinic that is attached to the Hospital and C&NC Unit. Guaranteed salary plus incentive first year, partnership offered second year. Located within half hour drive of many excellent fishing and resort lakes and state forest which offers excellent outdoor recreation. For more information contact Wallace M. Eid, Administrator, Mahnomen County & Village Hospital and Nursing Center, Mahnomen, MN 56557, (218) 935-2511.

Classified Advertisements

NEUROLOGIST. To join four other neurologists in growing 260-physician multispecialty clinic in western suburbs of Minneapolis. EEG, EMG and evoked potential studies in clinic. Ideal geographic location, academic interest encouraged. Subspecialty internist desired. Daniel Freking, M.D., Park Nicollet Medical Center, Meadowbrook Clinic, 6490 Excelsior Blvd., St. Louis Park, Minnesota 55426. (612) 927-3200.

FOR SALE Xray, 250 mA/150 Kv floating table top, Buckey Xray and dry processor. Good for chests, extremities, spines. 612-237-2262 evenings.

FAMILY PRACTICE PHYSICIAN - Board eligible/certified physician to join supportive primary care staff to provide quality care in a successful and innovative HMO. Located in St. Cloud, Minnesota (approx. 50,000 population, 3 colleges, full recreational activities, 70 miles from Twin Cities). New clinic facility. Full range of fringe benefits (competitive salary, liberal vacation, 2 weeks educational leave, retirement fund, etc.). Full range of FP responsibilities including OB. Contact Dr. Patrick Lalley, Central Minnesota Group Health Plan, 1245 15th Street North, St. Cloud, Minnesota 56301. (612) 253-5220.

MEDICAL COMPUTER SYSTEM If you are considering purchasing a computer system for your practice, discover how the "MEDCOM Medical Computer System" can make your practice more effective and efficient. The MEDCOM system is designed to give your medical specialty the finest, fastest automation available - at a reasonable cost - and with complete local training, service and support. MEDCOM grows as your practice grows, so you'll never need another system. There are well over 100 MEDCOM users in 34 different states. The variety of locations substantiates the reliability of the Medcom system. For information or an inclinic demonstration of the "MEDCOM Medical Computer System" please call DeMarce & Associates, 16576 Inguadona Beach Circle, S.W., Prior Lake, Minnesota 55372. Phone (612) 447-6866.

FAMILY PRACTITIONER needed to join 2 FP's at the Ellsworth, Wisconsin office of a progressive eleven physician group. Liberal fringes and financial package. Forty miles from metropolitan Minneapolis/St. Paul. Contact R. M. Hammer, M.D., River Falls, WI 54022. Phone (715) 425-6701 or (612) 436-8809.

FOR SALE Office equipment - 2 Midmark Power examining tables, 2 regular examining tables, Visirecord patient record cabinet, etc. 612-237-2262 evenings.

BUSY, ESTABLISHED ST. PAUL four person Internal Medicine group needs a Board Certified Internist/Endocrinologist to fill vacancy. Call (612) 645-5711, J. Wieler.

FOR SALE medical, surgical and laboratory equipment and supplies: 10 unit telephone system, examination tables, chairs, TAB filing system, scales, lamps, otoscopes-ophthalmoscopes, Clay Adams analyzer, etc. Call 612-932-6023.

UROLOGIST WANTED Board Certified-Board Eligible Urologist needed to join a well established downtown practice in Minneapolis. Send cirriculum vitae to: Minnesota Medicine (768) 2221 University Avenue Southeast, Suite 400, Minneapolis, Minnesota 55414.

PHYSICIANS WANTED Twin City Northern suburb. Lease 1000-3000 square foot shopping center. Ideal Family Practice location. No immediate competition. Bob Volk, (612) 332-2999.

CARDIOLOGIST. Excellent opportunity for a Board Certified or eligible Cardiologist to associate with a progressive Cardiology group in North Central Wisconsin. Modern single community hospital offering all varieties of comprehensive Cardiology and Cardiovascular/Thoracic Surgery Services. Position available now. If interested, send CV to and/or contact D. Joe Freeman, M.D., FACC, North Central Heart Clinic, 425 Pine Ridge Blvd., Suite 204, Wausau, Wisconsin 54401. (715) 845-NCHC (6242).

PHYSICIAN PRECEPTOR IN PEDIATRICS -Upper Peninsula Health Education Corporation is accepting applications for a full-time Physician Preceptor in Pediatrics. Responsibilities include patient care and clinical instruction of medical students of Upper Peninsula branch campus of Michigan State University's College of Human Medicine. Requirements are board eligibility or certification in pediatrics with a commitment to medical education. Academic rank and salary commensurate with experience. Send inquiries to John Hickner, M.D., Medical Director, Bay de Noc Family Health Center, Doctors Park, Escanaba, Michigan 49829. (906) 786-9510.

MINNEAPOLIS AND SUBURBAN practice of 10 family physicians seeks eleventh Board Certified or eligible family physician to join group or locum tenens. Major hospital affiliation, three practice sites. Direct inquiries to Dr. Youmans or Mr. Nickolay, 1206-42nd Avenue North, Minneapolis, MN 55412, (612) 522-6601.

TWELVE-PHYSICIAN multispecialty clinic is in immediate need of Family Physician. Located Anoka, MN; pension, profitsharing plan. Busy practice in expanding north-suburban area. Please contact James R. Walker, M.D., at 421-3680.

WANTED: FAMILY PRACTITIONER, OB/GYN. Group practice. Central Minnesota. Starting salary $45,000. Write Minnesota Medicine (755), 2221 University Ave. S.E., #400, Minneapolis, MN 55414.

INTERNIST, BOARD CERTIFIED or board eligible, for full-time faculty position with University-affiliated 220-bed general hospital educational program. Supervising residents on internal medicine ratations. Position carries faculty appointment with major Midwestern medical school. Competitive salary with attractive fring benefits. Call or write: John Hess, M.D., Medical Director, Broadlawns Medical Center, 18th and Hickman, Des Moines, Iowa 50314. Telephone (515) 282-2275. An affirmative action, equal opportunity employer.

FAMILY PRACTICE - Northridge Family Medicine Clinic, P.A. is looking for a fourth BE/BC F.P. to practice in our new clinic facilities in Mankato. Contact Tony Giefer, M.D.; 1695 LorRay Drive, North Mankato, MN 56001 or call 507-345-5293.

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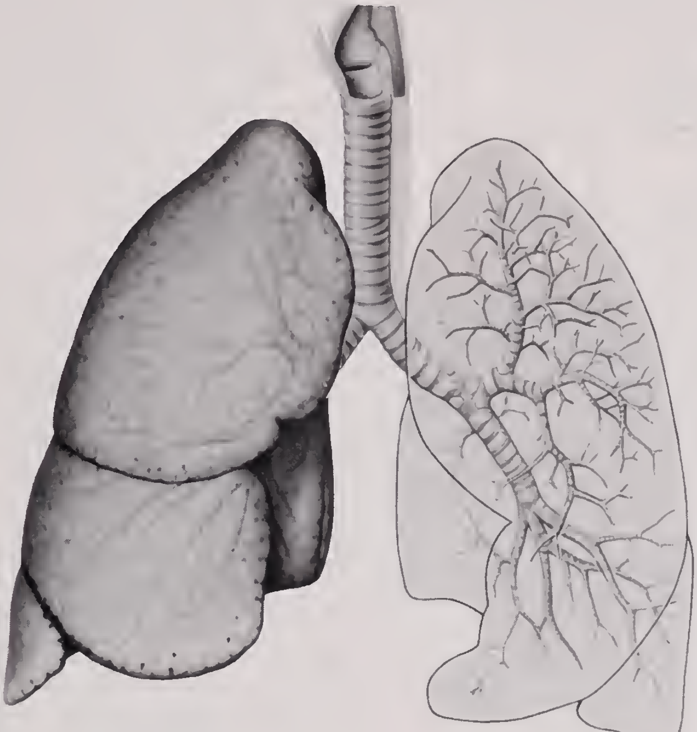

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cefaclor

250-mg Pulvules® t.i.d.

offers effectiveness against the major causes of bacterial bronchitis

H. influenzae, *H. influenzae*, *S. pneumoniae*, *S. pyogenes*
(ampicillin-susceptible) (ampicillin-resistant)

ummary Consult the package literature for prescribing
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ions and Usage: Ceclor® (cefaclor, Lilly) is indicated in the
ent of the following infections when caused by susceptible
; of the designated microorganisms
er respiratory infections, including pneumonia caused by
ococcus pneumoniae (Diplococcus pneumoniae), Haemoph-
fluenzae, and S pyogenes (group A beta-hemolytic
ococci)
ropriate culture and susceptibility studies should be
ned to determine susceptibility of the causative organism
lor

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to the cephalosporin group of antibiotics

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ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY
IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL
-ALLERGENICITY OF THE PENICILLINS AND THE
LOSPORINS, AND THERE ARE INSTANCES IN WHICH
ITS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS,
H DRUG CLASSES
iotics, including Ceclor, should be administered cautiously
patient who has demonstrated some form of allergy
larly to drugs
domembranous colitis has been reported with virtually all
pectrum antibiotics (including macrolides, semisynthetic
ins, and cephalosporins); therefore, it is important to
r its diagnosis in patients who develop diarrhea in
tion with the use of antibiotics Such colitis may range in
from mild to life-threatening
ment with broad-spectrum antibiotics alters the normal
the colon and may permit overgrowth of clostridia Studies
that a toxin produced by *Clostridium difficile* is one
cause of antibiotic-associated colitis
cases of pseudomembranous colitis usually respond to
continuance alone In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by C *difficile* Other causes of colitis should be ruled out

Precautions: *General Precautions* — If an allergic reaction to Ceclor® (cefaclor, Lilly) occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e g , pressor amines, antihistamines, or corticosteroids

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential If superinfection occurs during therapy appropriate measures should be taken

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly)

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis

Usage in Pregnancy – Pregnancy Category B — Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor® (cefaclor, Lilly) There are, however, no adequate and well-controlled studies in pregnant women Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed

Nursing Mothers — Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses Average levels were 0 18, 0 20, 0 21, and 0 16 mcg/ml at two, three, four, and five hours respectively Trace amounts were detected at one hour The effect on nursing infants is not known Caution should be exercised when Ceclor is administered to a nursing woman

Usage in Children — Safety and effectiveness of this product for use in infants less than one month of age have not been established

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70)

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment Nausea and vomiting have been reported rarely

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently fever) have been reported These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor Such reactions have been reported more frequently in children than in adults Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy No serious sequelae have been reported Antihistamines and corticosteroids appear to enhance resolution of the syndrome

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain — Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic — Slight elevations in SCOT SCPT or alkaline phosphatase values (1 in 40)

Hematopoietic — Transient fluctuations in leukocyte count predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal — Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200)

[061782R]

Note Ceclor® (cefaclor Lilly) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections including the prophylaxis of rheumatic fever See prescribing information

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strikes...

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So, the next time a nitrate is not enough, add Isoptin…for more comprehensive antianginal protection without side effects which may cramp an active life style.

ISOPTIN. Added antianginal protection without beta-blocker side effects.

Please see brief summary on following page

ISOPTIN®

(verapamil HCl/Knoll)

80 mg and 120 mg scored, film-coated tablets

Contraindications: Severe left ventricular dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (except in patients with a functioning artificial ventricular pacemaker), 2nd- or 3rd-degree AV block. **Warnings:** ISOPTIN should be avoided in patients with severe left ventricular dysfunction (e.g., ejection fraction < 30% or moderate to severe symptoms of cardiac failure) and in patients with any degree of ventricular dysfunction if they are receiving a beta blocker. (See *Precautions.*) Patients with milder ventricular dysfunction should, if possible, be controlled with optimum doses of digitalis and/or diuretics before ISOPTIN is used. (Note interactions with digoxin under *Precautions.*) ISOPTIN may occasionally produce hypotension (usually asymptomatic, orthostatic, mild and controlled by decrease in ISOPTIN dose). Elevations of transaminases with and without concomitant elevations in alkaline phosphatase and bilirubin have been reported. Such elevations may disappear even with continued treatment; however, four cases of hepatocellular injury by verapamil have been proven by rechallenge. Periodic monitoring of liver function is prudent during verapamil therapy. Patients with atrial flutter or fibrillation and an accessory AV pathway (e.g. W-P-W or L-G-L syndromes) may develop increased antegrade conduction across the aberrant pathway bypassing the AV node, producing a very rapid ventricular response after receiving ISOPTIN (or digitalis). Treatment is usually D.C.-cardioversion, which has been used safely and effectively after ISOPTIN. Because of verapamil's effect on AV conduction and the SA node, 1° AV block and transient bradycardia may occur. High grade block, however, has been infrequently observed. Marked 1° or progressive 2° or 3° AV block requires a dosage reduction or, rarely, discontinuation and institution of appropriate therapy depending upon the clinical situation. Patients with hypertrophic cardiomyopathy (IHSS) received verapamil in doses up to 720 mg/day. It must be appreciated that this group of patients had a serious disease with a high mortality rate and that most were refractory or intolerant to propranolol. A variety of serious adverse effects were seen in this group of patients including sinus bradycardia, 2° AV block, sinus arrest, pulmonary edema and/or severe hypotension. Most adverse effects responded well to dose reduction and only rarely was verapamil discontinued. **Precautions:** ISOPTIN should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of excessive pharmacologic effects. Studies in a small number of patients suggest that concomitant use of ISOPTIN and beta blockers may be beneficial in patients with chronic stable angina. Combined therapy can also have adverse effects on cardiac function. Therefore, until further studies are completed, ISOPTIN should be used alone, if possible. If combined therapy is used, close surveillance of vital signs and clinical status should be carried out. Combined therapy with ISOPTIN and propranolol should usually be avoided in patients with AV conduction abnormalities and/or depressed left ventricular function. Chronic ISOPTIN treatment increases serum digoxin levels by 50% to 70% during the first week of therapy, which can result in digitalis toxicity. The digoxin dose should be reduced when ISOPTIN is given, and the patients should be carefully monitored to avoid over- or under-digitalization. ISOPTIN may have an additive effect on lowering blood pressure in patients receiving oral antihypertensive agents. Disopyramide should not be given within 48 hours before or 24 hours after ISOPTIN administration. Until further data are obtained, combined ISOPTIN and quinidine therapy in patients with hypertrophic cardiomyopathy should probably be avoided, since significant hypotension may result. Clinical experience with the concomitant use of ISOPTIN and short- and long-acting nitrates suggest beneficial interaction without undesirable drug interactions. Adequate animal carcinogenicity studies have not been performed. One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. *Pregnancy Category C:* There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor and delivery only if clearly needed. It is not known whether verapamil is excreted in breast milk; therefore, nursing should be discontinued during ISOPTIN use. **Adverse Reactions:** Hypotension (2.9%), peripheral edema (1.7%), AV block: 3rd degree (0.8%), bradycardia: HR < 50/min (1.1%), CHF or pulmonary edema (0.9%), dizziness (3.6%), headache (1.8%), fatigue (1.1%), constipation (6.3%), nausea (1.6%), elevations of liver enzymes have been reported. (See *Warnings.*) The following reactions, reported in less than 0.5%, occurred under circumstances where a causal relationship is not certain: ecchymosis, bruising, gynecomastia, psychotic symptoms, confusion, paresthesia, insomnia, somnolence, equilibrium disorder, blurred vision, syncope, muscle cramp, shakiness, claudication, hair loss, macules, spotty menstruation. **How Supplied:** ISOPTIN (verapamil HCl) is supplied in round, scored, film-coated tablets containing either 80 mg or 120 mg of verapamil hydrochloride and embossed with "ISOPTIN 80" or "ISOPTIN 120" on one side and with "KNOLL" on the reverse side. Revised August, 1984 2385

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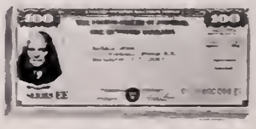

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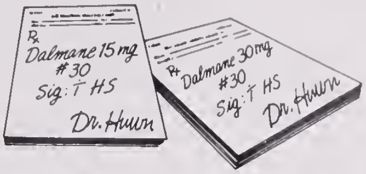

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